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HERPES SIMPLEX: A NEW POINT OF VIEW.

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HERPES LABIALIS is a trivial complaint, familiar to every practitioner as a common accompaniment of many fevers, particularly characteristic of pneumonia and cerebro-spinal meningitis, but also seen under many other conditions. Essentially similar recurrent herpes eruptions may affect the muco-cutaneous junction of the vaginal orifice, the cornea and more rarely the skin of the fingers or elsewhere. Everyday clinical observation makes it certain that the condition is not infective in any

ordinary sense of the word. It is clearly dependent on factors intrinsic to the patient. Workers using artificial pyrexia for the treatment of syphilis and other conditions have found that about 60% of those treated suffer an attack of labial herpes as a result (Boak, Carpenter and Warren⁽¹⁾). Many types of vaccine, particularly when administered intravenously, also provoke a crop of herpetic vesicles. The liability to respond in this fashion clearly varies greatly from one person to another. In some cases the mildest nasal infection, exposure to cold wind or mechanical irritation of the lips will result in herpes; with the majority of people a fairly severe febrile stimulus appears to be necessary. Corneal herpes is a distressing complaint, which, however, usually responds well to treatment; but the only clinical importance of labial herpes is in connexion with the widespread belief that its appearance is of good prognostic significance in pneumonia. To the academic virus

¹ Work carried out under grants for research on virus diseases from the Rockefeller Foundation and from the National Health and Medical Research Council.

worker, however, the nature of *herpes simplex* is a matter of very considerable importance, and much of the recent discussion on the nature of viruses has hinged around this condition.

The existence of a virus or virus-like agent in the fluid from herpetic vesicles was not discovered till 1912, when Gräfer⁽²⁾ showed that material from corneal herpes could produce an acute keratitis when placed upon the scarified cornea of a rabbit. This observation was soon confirmed and extended to include the other forms of *herpes simplex*, but not *herpes zoster*. Inoculation of the scarified rabbit cornea has remained the standard method of establishing the herpetic nature of any suspected lesion. About forty-eight hours after inoculation there is a slight cloudiness of the corneal surface, and close inspection will reveal numerous small focal swellings. Ulceration of these lesions follows during the next two days, and an acute purulent conjunctivitis develops. The inflammation subsides after a few days, leaving a variable degree of damage to the cornea. Usually the rabbit then remains well; but a proportion of animals on about the ninth day after inoculation show symptoms of central nervous infection—forced turning to the inoculated side, with subsequent paralysis of the hind quarters, convulsions and death. Both the local lesions and the damage to the central nervous system are caused by a typical virus, which can be transferred indefinitely from rabbit to rabbit, either by corneal or by intracerebral inoculation.

The properties of the herpes virus have been extensively studied. It is a relatively large virus, with a particle diameter of about 100m μ (0.1 μ) by filtration methods (Elford, Perdrau and Smith⁽³⁾). Lepine states that by special staining methods he has demonstrated the virus in the form of tiny rodlets in infected tissues. The characteristic histological change produced by the virus is the intranuclear inclusion. In fact, we can regard the lesions of the corneal epithelium two days after inoculation with herpes virus as providing the classical examples of intranuclear inclusion bodies. The nuclei are somewhat enlarged, with the chromatin heaped up along the nuclear membrane; the inclusion body is an acidophilic central mass, not quite filling the area rendered vacant by the peripheral accumulation of chromatin. According to Nicolau and Kopciowska⁽⁴⁾ the inclusion is essentially a close-packed colony of virus particles; but though this is a likely enough interpretation, it cannot yet be regarded as fully established.

In rabbits, guinea-pigs and mice the central nervous system is the tissue most susceptible to infection by the virus, and the commonest method of experiment is to use intracerebral inoculation in one or other of these species. Other tissues are, however, also susceptible, and skin lesions can be produced by suitable strains of virus on rabbits and guinea-pigs at least. The high susceptibility of the rabbit cornea has already been mentioned. The respiratory membrane (chorioallantois) of the developing chick embryo has an external surface

covered with ectodermal epithelium, and the lesions produced on it by herpes virus can be regarded as essentially similar to those of the skin and cornea. Mesodermal tissues may also be infected, and intratesticular inoculation in rabbits is a not infrequent method of maintaining the virus.

If an experimentally infected animal recovers, it nearly always develops an increased resistance to infection with the virus. The immunity may be absolute or may be very slight, according to several factors—the species and age of the animal, the route of inoculation and the virulence of the strain used for testing immunity. In no essential respect does the immunity differ from that produced by infection with many other viruses.

As long as we deal only with animals in the laboratory there is no shadow of doubt that herpes virus is a perfectly typical virus, an extrinsic infectious agent which produces a characteristic effect when introduced into a susceptible animal, and can be transmitted indefinitely from one individual to another. But the conditions in the human being are not so clear. In the recently published "*Handbuch der Virusforschung*" (1938), for instance, Doerr,⁽⁵⁾ the leading European authority on herpes research, strongly supports the view that *herpes simplex* in man is not an exogenous infection, but an endogenous production by the cells of a virus-like agent under the influence of certain physiological stimuli. Once the agent has been produced it will act on the cells of susceptible animals (not man) as a true virus; but according to this view it is primarily a derivative of the physiologically modified human cells. It is doubtful whether Doerr's opinion on the matter is wholeheartedly accepted by many other virus workers; the general point of view is probably that both an endogenous and an exogenous origin are conceivable, and that no clear decision between the two hypotheses is yet possible. In this paper we wish to put forward as clearly and positively as possible the opposing view that *herpes simplex* is a specific infectious disease due to an exogenous virus. The virus is not derived from altered cell constituents, but is the direct descendant of a preexisting virus.

Aphthous Stomatitis in Infants as the Primary Herpetic Infection.

The most important evidence for this statement is derived from the work of Dodd, Johnston and Buddingh,⁽⁶⁾ which showed conclusively that the common clinical condition in infants, aphthous stomatitis, was an herpetic infection. In almost every case they were able to show that material from the mouth vesicles or ulcers could produce a typical herpetic keratitis on the scarified cornea of a rabbit. They did not, however, provide complete proof that the infection was a primary one, although they considered that since, unlike recurrent herpes, it was often accompanied by fever, this was highly probable. In Melbourne we have found it easy to confirm the American workers' opinion that aphthous or ulcerative stomatitis in infants aged

from one to three years is practically without exception a manifestation of infection by *herpes simplex* virus. In addition we have obtained almost conclusive evidence by means of serological studies that it represents a primary herpetic infection. In six cases of stomatitis in infants and children we have obtained at the first examination swabbings from the local lesions and a sample of blood. About a month later a second sample of blood was taken. The swabs were rubbed on the scarified cornea of a rabbit and a diagnosis of herpes was made if (a) a typical keratitis appeared and was followed by either (b) central nervous system infection with typical symptoms and death, or (c) the appearance of herpes antibody in the rabbit's serum three weeks after infection. In five of the six cases these criteria were fulfilled. The sera from the two samples of blood from each patient were separated, inactivated at 55° C. and stored in the refrigerator till they could be tested for herpes antibody by the quantitative egg membrane technique (Burnet⁽⁷⁾). In each case it was shown that while the first serum contained no antibody, this was present in measurable amount in the second serum.

The only possible deduction from these facts is that young children are highly susceptible to infection with the virus of *herpes simplex*; it produces in them a stomatitis often associated with fever. Secondary lesions may develop in parts of the skin readily contaminated with saliva. With few exceptions the stomatitis is self-limited and the child is well in from ten to fourteen days. Antibody appears in the serum probably at about this period.

Clinical Characteristics of Herpetic Stomatitis.

Stomatitis in infancy and early childhood is a common condition, but the confusion in the terminology and classification reflects the lack of knowledge of the aetiology of the condition. We are concerned here with the disease usually described in text-books as aphthous stomatitis; but some of our patients would fit the descriptions given of patients with catarrhal stomatitis or membranous stomatitis. The best term is the aetiological one of herpetic stomatitis. The common occurrence of this disease is shown by the fact that we were able to investigate twelve patients during

the months of October, November and December, 1938, through the assistance of the honorary and resident medical staffs at the Children's Hospital, Melbourne; and those engaged in both hospital and private practice know that the disease is common, especially amongst children of the poorer classes. Most of the cases are observed in children between the ages of one and three years. The youngest patient we have observed was twelve months old. Primary infections may, however, be seen in older children; and in Table I we have included a child of ten years whose blood provided serological evidence that his stomatitis was a primary herpetic infection.

The symptoms of herpetic stomatitis are those of the local lesions plus general symptoms of toxicity, which are often moderately severe. Infants particularly are irritable, and resent being nursed even by their parents; they resist strongly the examination of their mouth and are disinclined to eat or drink. The temperature may be elevated up to 39.5° C. (103° F.) for several days, and between the periods of restlessness the child or infant is very drowsy; the clinical picture is rather different from that seen in most other febrile diseases of infancy.

The children are not often brought to the out-patient department of the hospital early enough for the mouth lesion to be studied in its earliest stages. It commences as a reddened area, three to six millimetres in diameter, with a vesicular centre which appears to spread and become purulent. It may be situated on the margin of the tongue, on the buccal mucous membrane, on the lips, on the pharynx, or on the roof of the mouth. The gums are always hyperaemic and swollen, but seldom have vesicles or ulcers. In two cases the vesicles, commencing only on the roof of the mouth, spread to give a fairly extensive membranous lesion. In all cases the breath was offensive. The submental and tonsillar lymph glands were usually enlarged and tender. These lesions gradually heal, and the temperature subsides in the course of seven to fourteen days. Of some interest were the skin lesions which we saw as part of the virus infection. Four of our patients had herpes lesions of the skin around the lips, in addition to oral vesicles, and one other child developed a vesicle half an inch in

TABLE I.
Primary Herpes Infections in Children.¹

Patient.	Age in Years.	Rabbit Test.		First Serum Sample: Antibody.	Second Serum Sample.	
		Keratitis. ²	Antibody.		Days After Collection of First Specimen.	Antibody.
de Y.	2	+++	0.007%	Nil (70%)	23	+(2.1%)
Bag.	1 ¹¹ / ₁₂	+++	0.016%	Trace (20%)	34	+(0.75%)
Vin.	1	+++* +++	0.05%	Nil (100%)	34	+(0.035%)
Gup.	2 ¹ / ₂	++	0.01%	Nil (52%)	20	+(0.67%)
McP.	3	++	0.05%	Nil (67%)	—	+(0.25%)
O.T.	10	—	—	Nil (110%)	20	+(2.7%)

¹ Herpes antibody is expressed as the percentage to which the activity of the virus is reduced by being mixed with undiluted serum under standard conditions; the smaller the value, the more potent is the serum.

² Under "keratitis" the number of plus signs indicates the degree of purulent inflammation, * indicating death from specific encephalitis.

diameter over the pinna of the left ear. A female infant, aged fifteen months, who constantly sucked her finger, developed a vesicular patch on that finger, when she was suffering from typical herpes stomatitis. The virus was isolated from fluid obtained from the finger lesion.

Several patients were investigated bacteriologically for the presence of the organisms of Vincent's angina in the mouth, with negative results. Cultures from skin lesions were found to yield staphylococci; but these must be regarded as secondary invaders following the virus infection.

An investigation of the diet of these children indicated that they were nearly all receiving adequate amounts of fruit and vegetables and starchy foods. There was a deficiency of protein foods. The inquiries of Dr. V. L. Collins have shown that this deficiency is very common amongst children of the public hospital class, and we feel that it plays little part in the disease under discussion.

Persistence of Herpes Infection in Man.

With most virus diseases, once the infection has been overcome and symptoms disappear, the virus is destroyed or eliminated and the patient is permanently non-infective for others. Herpes infections, however, once contracted, seem to persist for life. The virus remains for the most part latent; but under the stimulus of trauma, fever and so forth it may at any time be called into activity and provoke a visible herpetic lesion. It is not known where or in what state of activity the herpes virus persists between its outbursts of activity. Most people have recurrent herpes only on the lips; but there are not infrequent atypical sites, such as the cornea or a finger. In such subjects herpetic eruptions tend to recur at the same sites. This would suggest that the virus vegetates in skin cells at the site of the lesions; but there are some supporters for the view that it persists in some part of the nervous system, perhaps the Gasserian ganglion, while others would assume a site in relation to the mouth cavity or salivary glands.

The evidence that the virus persists in the body throughout life is still necessarily indirect, and is largely derived from serological studies. Herpes antibody is very readily estimated by several methods, of which the most convenient and accurate in our experience is the use of the chorioallantois of the developing egg. By this means we can express the activity of an antiserum quantitatively in the form of a percentage representing the number of virus particles which "survive" contact with undiluted serum under standard conditions. Practical details and a general discussion of the theory of this method of antibody titration may be found in a monograph by Burnet, Keogh and Lush.⁽⁸⁾ A strong herpes serum, for instance, will reduce the count to 0.01% of the control or less, while a serum with no antibody will give 100% of specific foci.

By these methods we have tested a large number of specimens of human serum from persons of all ages. If we take first the results with adult serum

we find a sharp division into two groups, those specimens with no antibody and those with a great deal of antibody. Figure 1 shows the distribution of antibody titres amongst 43 specimens of adult serum, mainly from members of the staff of the institute. The almost complete absence of serum of intermediate titre is very striking. On account of this sharp division into "positive" and "negative" types of serum we have in most instances used a simplified test with one dilution of virus. This allows a statement that the serum has no antibody or has a considerable amount of antibody, but it does not give a figure for the titre of the positive specimens of serum.

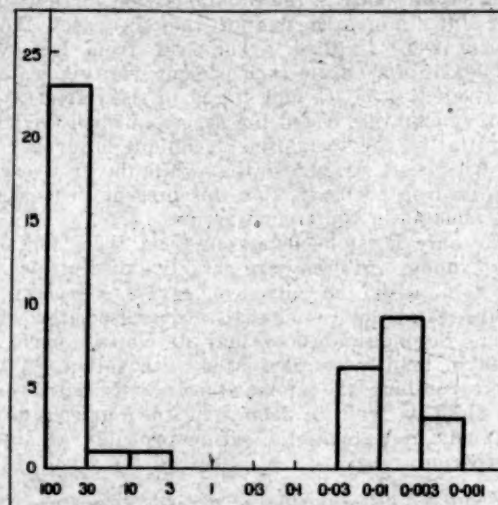


FIGURE 1.

Distribution of herpes antibody titre amongst 43 specimens of adult human serum. They are divided into groups according to their power to reduce virus activity (number of foci on the egg membrane) to the percentage values shown in the abscissae. The first group contains 23 specimens giving values between 30% and 100%, the next one serum between 10% and 30%, and so on.

Next to this sharp division into "positive" and "negative" types of serum the most interesting finding in regard to adult serum is the influence of social status on the results. Table II shows the distribution amongst the following types of subjects: (a) a series of university graduates, (b) non-graduate workers on the staff of the institute, (c) a random series of Melbourne Hospital patients, (d) a series of children and adolescents, including

TABLE II.
Proportion of "Positive" and "Negative" Types of Serum in Different Social Groups.

Group.	"Positive."	"Negative."	Percentage "Positive."
A. University graduates	10	17	37
B. Non-graduate laboratory workers	13	9	59
C. Hospital patients	51	4	93
D. Children and adolescents	56	4	93

¹ In group D there were five specimens of serum giving intermediate values of 0.1% to 2.5%. These are not included.

poliomyelitis contacts and Children's Hospital patients.

It is clear that in Melbourne an extremely high proportion of the children and adults who attend public hospitals possess herpes antibody. Amongst persons presumably from more comfortable homes the proportion is much lower. This same type of difference was also noted by Andrewes and Carmichael⁽⁹⁾ in England.

Only in very young children do we find a preponderance of "negative" serum reactions. In a series of 42 infants from orphanages *et cetera*, who were from six months to two years of age, the following figures were obtained: "positive", 4; "intermediate", 7; "negative", 31.

Although "intermediate" values are more common in young children than in adults, the "positive" serum is on the whole of the same high titre as "positive" adult serum.

Several workers, including Andrewes and Carmichael⁽⁹⁾ and Brain,⁽¹⁰⁾ have shown that

stomatitis. The virus, however, persists somewhere in the body, probably for the whole of life, always apt, under a sufficient stimulus (the necessary intensity of which varies greatly from one person to another), to break out into local activity. Infection of infants may be from a virus liberated from a recurrent lesion in an adult or from a primary lesion in another child. In our small series of Melbourne cases there were no instances of more than one child in a family having stomatitis, nor was there any instance of a patient having been in contact with another child similarly affected. Dodd, Johnson and Buddingh,⁽⁶⁾ however, report that they occasionally observed two cases in the same family.¹ Considering the high incidence of herpes infection found in Melbourne, it would be very unlikely that older brothers or sisters of an infant with stomatitis had not previously been infected, so that familial infections would be infrequent. The infection is probably derived in most cases from recurrent herpetic lesions in adults.

TABLE III.
Representative Herpes Antibody Titres amongst Children Aged Over One Year.

Age of Child in Years.	Titres of "Positive" Specimens of Serum.							
	0-005	0-103	0-003	0-004	0-003	0-035	0-005	0-12
1 to 5	0-005	0-0055	0-003	0-001	0-01			
6 to 10								

¹ The figures, as in Table I, represent the percentage to which the activity of the virus was reduced by the action of undiluted serum.

persons liable to suffer from recurrent herpes always possess in their serum antibody against the virus. We have consistently had the same results; all members of the laboratory staff who are prone to *herpes labialis* have antibody, and all of six children suffering from herpes in association with some febrile condition also had antibody. The converse does not hold. A number of individuals with antibody give no history of herpes. Judging from the work of Brain⁽¹⁰⁾ and of Boak, Carpenter and Warren,⁽¹⁾ it is probable that all such individuals, given a sufficiently severe febrile stimulus, would present herpetic lesions.

The Epidemiology of Herpes Infections.

On the basis of these experimentally established facts we can draw certain conclusions in regard to the epidemiology of herpes and provide a more satisfying picture of the disease than can be obtained either on Doerr's hypothesis of an endogenous virus or from the non-committal attitude of most writers on the subject. *Herpes simplex* is primarily an acute, often febrile disease of infancy or early childhood, of which the characteristic lesion is a vesicular (aphthous) stomatitis, often with secondary involvement of lips, face or fingers. Though we have no direct evidence on the point, it is probable that many primary infections are so mild that they never come under medical observation. The primary lesions, in the absence of serious bacterial complications, heal within a week or two, and antibody develops in the blood. In all probability the child is thereafter immune to herpetic

Whatever the source of infection, transfer apparently occurs much more readily in poorer than in more comfortable environments, just as is the case with other infectious diseases. It is a well-known clinical fact that aphthous stomatitis is mainly a disease of infants or toddlers, and of the poorer strata of population. We do not think that the two observations, (i) that sera are either quite free from antibody or contain it to a high titre, and (ii) that adults of the economically comfortable classes are much less likely to possess antibody than public hospital patients, can be explained, unless we assume that at some time in childhood a non-specific resistance to primary infection develops. Once that stage has been reached the population is permanently divided into two groups, herpetic and non-herpetic. In the herpetic the virus persists, manifesting its existence (i) by the periodical appearance of herpes lesions, (ii) by supplying a constant or intermittent antigenic stimulus which maintains the circulating antibody at a high level. The non-herpetic must be frequently exposed to infection with the virus, but, thanks to his development of resistance, goes unscathed. This resistance is in no sense an immunological one; in fact it is primarily because of this resistance that the non-herpetic does not develop herpes antibody. The apparent paradox that the presence of much circulating antibody does not prevent the occurrence of local herpes is only one of the many anomalies which are encountered when we try to assess the importance of antibody in virus diseases.

¹ See addendum.

Herpes simplex is a specifically human disease, and, looked at from the broadest biological viewpoint, can be regarded as a very successful adaptation of the herpes virus to ensure its indefinite survival. The disease is quite a harmless one from the human point of view, and there is even some evidence that herpetic diseases are less liable to some other infectious diseases than non-herpetic. Yet a situation in which about 90% of the largest group in the community are providing harbour for the virus must be regarded as an extraordinary biological success for any parasite. As far as we know at present, no other virus has established this type of almost symbiotic existence in man; but it is of great interest that two viruses which are clearly related to herpes virus have developed a similar relationship with two other mammalian species. In the middle west of America swine are almost universally infected with the virus of pseudo-rabies, without in most instances any visible symptoms of infection (Shope⁽¹¹⁾). This virus produces nuclear inclusions of the herpes type, and there is an essential similarity of the lesions it produces in the rabbit to those of herpes. The common Indian monkey (*Macacus rhesus*) is also very frequently infected, without symptoms, by a virus that is even more closely related to herpes than is the pseudo-rabies virus. This B virus, although most innocuous for monkeys, is highly pathogenic for man (Sabin and Wright⁽¹²⁾), and has been responsible for the death of a distinguished American research worker, and in all probability for that of a king of Greece. Both died after being bitten by apparently normal monkeys.

Conclusion.

There is little doubt that adequate search in other animal species would reveal other viruses of this group; but even on the available evidence we can feel confident that the herpes virus is the descendant of an ancient stock which has evolved with its mammalian hosts. Herpes virus, B virus and pseudo-rabies virus are three branches from that original stock, each now adapted to an almost symbiotic existence with its respective host, man, monkey or pig.

References.

- ⁽¹⁾ R. A. Boak, C. M. Carpenter and S. L. Warren: "Symptomatic Herpetic Manifestations following Artificially Induced Fevers", *Journal of Bacteriology*, Volume XXVII, 1934, page 33.
- ⁽²⁾ W. Grütter: Quoted from R. Doerr and E. Berger: "Herpes Zoster and Encephalitis", *Handbuch der Pathogenen Mikroorganismen*, Third Edition, Volume VIII, 1929, page 1415.
- ⁽³⁾ W. J. Eilford, J. R. Perdrau and W. Smith: "The Filtration of Herpes Virus through Graded Colloid Membranes", *The Journal of Pathology and Bacteriology*, Volume XXXVI, 1933, page 49.
- ⁽⁴⁾ S. Nicholson and L. Kopciowska: "La morphologie de l'agent microbe herpétique dans le tissu des animaux infectés expérimentalement et le mécanisme de la formation des inclusions qu'il engendre dans les cellules", *Annales de l'Institut Pasteur*, Volume LX, 1934, page 401.
- ⁽⁵⁾ R. Doerr: "Handbuch der Virusforschung", 1933.
- ⁽⁶⁾ K. Dodd, L. M. Johnston and G. J. Buddingh: "Herpetic Stomatitis", *Journal of Pediatrics*, Volume XII, 1933, page 95.
- ⁽⁷⁾ F. M. Burnet: "The Use of the Developing Egg in Virus Research", Medical Research Council of the Privy Council, Special Report Series, Number 230, 1936.
- ⁽⁸⁾ F. M. Burnet, E. V. Keogh and D. Lush: "The Immunological Reactions of the Filterable Viruses", *The Australian Journal of Experimental Biology and Medical Science*, Volume XV, 1937, page 237.

⁽⁹⁾ C. H. Andrewes and E. A. Carmichael: "Presence of Antibodies to Herpes Virus in Post-Encephalitic and other Human Sera", *The Lancet*, Volume I, 1930, page 857.

⁽¹⁰⁾ R. T. Brain: "The Demonstration of Herpetic Antibody in Human Sera by Complement Fixation, and the Correlation between its Presence and Infection with Herpes Virus", *The British Journal of Experimental Pathology*, Volume XIII, 1932, page 166.

⁽¹¹⁾ R. E. Shope: "Experiments on the Epidemiology of Pseudo-Rabies. II: Prevalence of the Disease amongst Mid-Western Swine and the Possible Role of Rats in Herd to Herd Infections", *The Journal of Experimental Medicine*, Volume LXII, 1935, page 101.

⁽¹²⁾ A. B. Sabin and A. M. Wright: "Acute Ascending Myelitis following a Monkey Bite, with the Isolation of a Virus Capable of Reproducing the Disease", *The Journal of Experimental Medicine*, Volume LIX, 1934, page 115.

Addendum.

Dr. A. P. Derham has kindly allowed us to use the following account of a series of infections observed by him in one household. It provides more direct evidence that primary herpetic stomatitis is contracted by contact with individuals suffering from recurrent herpes lesions, and gives an indication of the length of the incubation period. No laboratory tests were made, and the diagnoses rest on clinical evidence only.

Mrs. X. had suffered from recurring mild herpes of the lips and mouth for years. Towards the end of the week ending March 4, 1939, she had a fresh attack with sore mouth and slight malaise. Simultaneously the nurse in charge of the children also had a definite herpetic lesion on her lip. On March 8, 1939, two of the children developed fever and malaise. H.X., a boy, aged six and a half years, had discrete red spots in the mouth and on the lips, and some raised red spots on the side of the nose. E.X., a boy, aged two and a quarter years, complained of a sore mouth, and when seen five days later had one or two remaining red spots inside the cheek.

On March 13, 1939, the third child, G.X., a boy, aged four and a half years, developed malaise and fever and vomited. When seen he had typical aphthous stomatitis lesions on the lips, mouth and tongue. The lesions on the other two children were then healing, but their appearance was consistent with their being of herpetic character. All made an uneventful recovery in a few days from the onset.

If, as seems practically certain, these infections were herpetic, the incubation period can probably be taken as four to five days.

NON-VENEREAL INFECTIONS OF THE GENITO-URINARY ORGANS.¹

By M. GRAHAM SUTTON, M.B., Ch.M. (Sydney),
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Brisbane.

In the comparatively short time at our disposal it will not be possible for me to do more than mention or briefly touch on certain abnormal conditions, mainly for the sake of completeness, and I shall endeavour to deal more thoroughly with the more important diseases of the lower part of the urinary and generative tract and those most commonly met with in practice. Accordingly, the scheme I have adopted for this purpose is the following. Starting distally, I shall discuss non-specific urethritis in the male and then in the female, next prostatitis and vesiculitis, then epididymitis, and finally cervicitis.

¹ Read at a meeting of the Downs and South Western Medical Association at Toowoomba, Queensland, on February 15, 1939.

Non-Specific Urethritis in the Male.

In the male the urethra harbours a great number of different bacteria. The incidence of these non-pathogenic organisms is proportional to their distance from the bladder; that is to say, they are most numerous in the anterior part of the urethra and absent from the prostatic part. The meatus and *fossa navicularis* are laden with germs, which decrease in number and variety as the bulb is reached, where there are few, if any.

The commonest inhabitants are the three strains of staphylococcus and various types of micrococci and diphtheroid bacilli. These organisms, though usually non-pathogenic, may become pathogenic on occasions, and in addition other pathogenic organisms may cause a non-specific urethritis.

Of the pathogenic organisms, the colon bacillus is productive of the greatest number of infections. Next in frequency is the staphylococcus, then *Micrococcus catarrhalis*, and lastly the streptococcus.

Isolated cases of urethritis due to *Bacillus lactis aerogenes*, to the pneumococcus and to *Bacillus pyocyaneus* do occur, while tuberculous urethritis is secondary to tuberculous infection of the bladder or prostate and vesicles. Decrey's bacillus always produces a urethral discharge if the chancroid is intraurethral. No further mention will be made of these conditions, which are touched on only for the sake of completeness.

The important thing to remember, however, is that not every urethral discharge is due to venereal disease or to the gonococcus. This fact should be considered, not only from a therapeutic point of view, but also from a social standpoint. Too often the unsympathetic practitioner is wont to make unwarranted insinuations and accusations on insufficient data or in ignorance of the clinical pathology of urethritis. It may be difficult to demonstrate any organism in some of these discharges by direct smear, and possibly also by attempts at culture; but that in itself is no excuse for jumping to conclusions.

Causes of Urethritis.

There are many factors and conditions which may predispose to or cause inflammation of the urethral mucosa and produce a discharge. Amongst them are the following.

Uncleanliness.—Urethritis may be set up from coitus with a woman with a non-specific vaginitis or with a woman who unconsciously carries infection to the vulva and so into the vagina by wiping the anus after defaecation in a forward direction.

Bacillus Coli Communis.—Urethritis due to the *Bacillus coli communis* may arise in the same way. Occasionally in men of middle age, who are run down in health through worry *et cetera* and who neglect their bowels, a spontaneous urethritis due to *Bacillus coli communis* infection may occur with or without a hæmatogenous prostatitis or pyelitis.

Previous Infective Illness.—Occasionally during or after measles a urethritis may appear; no

organisms may be demonstrable in the discharge, but only epithelial cells. Similarly in mumps, especially if the parotitis is accompanied by orchitis, urethritis is not uncommon. Typhoid fever is another disease in which urethritis may appear.

Though the urethritis which accompanies non-specific prostatic-vesiculitis or epididymitis is usually a posterior urethritis, this may spread forward through the cut-off muscle and involve the anterior part of the urethra, producing a discharge, with pus and muco-purulent threads in the urine. Urethritis may also be secondary to cystitis or pyelitis with or without calculus formation.

A man, in the middle thirties, consulted me for a purulent, slightly blood-stained discharge which had been present for a few days. He had also some frequency of micturition; he passed urine once or twice during the night, and in the day-time more often than usual. The discharge contained pus and epithelial cells and a few red corpuscles. No gonococci or other organisms could be found in a Gram-stained smear. Examination *per rectum*, made after a week's irrigation treatment, revealed no abnormality of the prostate or vesicles, and the prostatic smear contained no gonococci and only a few pus cells. The urine was acid and turbid with pus. The specific gravity was 1020. Albumin was present. In a wet film pus cells, motile bacilli and some oxalate crystals were seen. Excretion pyelography disclosed early hydronephrosis on the right side. Cystoscopic examination revealed cystitis, with pronounced redness about the ureter meati. A diagnosis of right-sided infected hydronephrosis was made. In all probability the causative organism was the *Bacillus coli communis*, and the patient had contracted *Bacillus coli* urethritis.

Urethritis may occur during a systemic disease, for example, nephritis, diabetes *et cetera*. The following is a case in point.

A youth, engaged as a builder's apprentice, was sent to me by another practitioner because of a urethral discharge. He was not suspected of having gonorrhoea by his medical attendant, who knew the family well, and the lad denied the possibility. The discharge was not frankly purulent and not profuse. Slight circummeatal redness and some scalding and frequency of micturition were present. He had also had one or two urethral hæmorrhages and blamed his work. The urine was turbid with pus and contained typical urethral threads. It was unfortunately not examined clinically. In the stained smear pus was seen, but no gonococci or other organisms were found.

The prostate and vesicles felt normal *per rectum*. Anterior urethroscopic examination revealed pronounced congestion in the region of the bulb, which bled easily and freely. The patient was treated for urethritis in a routine way, with some improvement, and then ceased coming for treatment.

One day at work he became suddenly ill, and was taken home by ambulance and put to bed. His family doctor was called in, and the lad was found to be suffering from nephritis, from which he soon died, after having had a fit. His urine was almost solid with albumin.

I cite this case from memory as an example of urethritis due to a systemic condition. It is also an instance of an error of omission.

Mechanical or Chemical Causes.—A translucent discharge may accompany congestion and hyperæmia of the urethral mucosa, as, for example, after stormy coitus (so-called strain) or in chronic or even acute alcoholism. The gleet discharge in

these cases is really a catarrhal urethritis, and not strictly an infection. However, it is well to remember it; it is not uncommon.

In young children, hyperacidity of the urine, whether due to oxalic or to uric acid, and in old men who have phosphaturia and residual urine due to prostatic enlargement, a chemical urethritis may occur. Finally, do not forget that chemical urethritis may occur during continued treatment for long drawn out specific urethritis or owing to prophylactic use of antiseptics in too great a strength. Urethritis is also common during catheter drainage and may call for suprapubic drainage instead.

Points in the pathology of these types of urethritis are worth noting.

The organisms enumerated previously do, of course, appear as a complication of gonorrhoeal urethritis; but we are not concerned with this disorder tonight.

The colon bacillus may be found in pure culture, particularly in the posterior part of the urethra, in association with prostatitis. Pyogenic cocci may be the predominating organisms in the anterior part of the urethra, where they may invade the mucus-secreting glands of Littre, producing a pronounced infiltration of the crypts or gland-mouths. This may possibly lead subsequently to a stricture of the resilient type. These organisms do not often penetrate into the submucosa between the columnar epithelial cells lining the urethra, producing a peri-urethritis, as does the gonococcus so typically. Hence extensive, hard stricture is not likely to occur. Lymphangitis and adenitis of the glands in the groin, with bubo formation followed by suppuration, may occur with a quite insignificant staphylococcal urethritis. Incision and drainage will then be required. Never attempt to dissect out the gland.

Symptoms and Diagnosis.

Except for slight burning on micturition, and a little tenderness along the urethra, worse during erection, there may be no subjective symptoms. The examination of the discharge is the all-important thing. The colour, consistency and quantity of the discharge, and even the morphological characteristics of the bacteria in simply stained smears, are not often sufficient data on which to base a conclusion as to the causative organism. Special staining or culture methods are necessary. It is true that the typical staphylococcus, the streptococcus and the colon bacillus are usually easy to identify; but if atypical gonococci are present along with these, there may be doubt and confusion. This may be so in cases of reappearance of an incompletely treated gonococcal infection of the posterior part of the urethra. The *Micrococcus catarrhalis* has staining properties similar to those of the gonococcus, but differs in that it will grow on ordinary media at room temperature whereas the gonococcus will not. Hence the services of the bacteriologist are often required.

Prognosis and Treatment.

Immediate and rational treatment usually gives prompt relief of symptoms, and many of the disorders clear up quite easily. A 1/8,000 to 1/4,000 solution of potassium permanganate may be effective for irrigation; but better results are often obtained with a 1/6,000 to 1/4,000 solution of acriflavine, picric acid (1/2,000 to 1/500), chloramine T., or mercury oxycyanide (1/8,000 to 1/4,000). This last drug, in a 1/6,000 to 1/4,000 solution, is undoubtedly the best in mixed infections and in staphylococcal infections. For *Bacillus coli* infections aluminum acetate, in an 0.5% solution gradually increased to 2% as the patient's tolerance increases, or acriflavine, is often to be preferred.

But in any case, whatever local treatment is being used, it is at present the practice to treat patients with urethritis and genito-urinary infections generally by modern drug therapy, using the sulphanilamide group of drugs according to the most recent chemical and clinical research on that type of chemotherapy. The preparations are many and varied; they are continually being improved and new ones introduced. Doubtless they are all well known to you.

An outline of the treatment now used is, generally speaking, as follows.

1. At the commencement of treatment sulphanilamide is given in a dose of two to three grammes (four to six tablets) per day in divided doses after meals, with plenty of water. The dose is increased or diminished according to tolerance or necessity later on.

2. An alkaline mixture is given as a routine measure, as an adjuvant to the drug, and as a sedative to the urinary tract. It is said to render the drug less toxic.

3. Low pressure urethral injections or instillations, or both, are given in addition.

4. While these drugs are being administered the patient should be closely watched for toxic effects, and the drug should be discontinued if they become severe. They are headache, nausea, vomiting, a morbilliform rash, cyanosis *et cetera*.

5. In addition, any foods or drugs containing sulphur, such as eggs, onions, Epsom and Glauber salts, liquorice and analgesic and hypnotic drugs derived from aniline, phenyl-hydrazine and sulphonal, must be avoided.

There is a patient in hospital at present who had a beautiful confluent morbilliform rash and cyanosis after taking four tablets of the drug three times a day for eight days. The rash lasted thirty-six hours and then disappeared.

Sulphanilamide is not effective in every case. If it is going to be of help there will be obvious evidence in a few days. If there is no response in ten days its re-administration later on may be effective.

Alterations in dosage and methods have occurred since the introduction of sulphanilamide, and doubtless further changes will be made. In fact, lately it has been recommended that its use should be

delayed for a week or two and that an attempt should be made to increase tissue immunity by means of vaccines in the early stage. In any case, whether vaccines are given or not, if this principle is subscribed to it is advisable to wait till a leucocytosis has had time to develop.

The use of the particular drug known as "Uleron" is recommended in this way. The dose is two tablets three times a day for short periods only—four days, with a six or eight days' interval. Prolonged administration is apt to produce peripheral neuritis and other untoward effects.

The latest drug, known as "M & B 693", is stated to be the most potent agent available at present. Toxic effects occur less frequently and are quickly eliminated by reduction of the dose. It is considered effective without irrigations or other local adjuvant treatment. The dose is six tablets, each of 0.5 gramme, per day, after food. After five days the dose is reduced to three tablets a day for another five to nine days. Cure may take place in from five days to a week.

Now, while it may be said that these new drugs are very useful in the treatment of urethritis in all stages and of surface infections of the urinary tract in general, and that they have shortened the time required for a cure and in addition have lessened the incidence of complications, nevertheless they are not always completely successful. The tendency is for them to free the urine from pus in a few days; but this relief is not always permanent, and in a further seven to fourteen days the trouble recurs.

Our experience in Brisbane with these drugs in the treatment of non-specific infections of the urinary tract corroborates for the most part the experience and reports of others. They have been used in all the ordinary types of infection commonly met with amongst urological patients. The difficulty is not with the simple cases of pyelitis and cystitis, in which there is no grossly pathological condition and in which the infection is merely a mucosal one, but in those in which there are complications within the urinary tract.

On the whole, patients with prostatitis respond better than those with vesiculitis or epididymitis. Similarly, patients with obstruction, whether at the vesical neck or in the ureter, are benefited only temporarily. In post-operative cases, such as prostatic and bladder cases and some renal cases, in which necrotic tissue or infected granulation tissue is still present, clearing up of the infection and pus can hardly be expected.

One complication of non-specific urethritis is deserving of mention, namely, periurethritis and periurethral abscess. This complication, fortunately not of very frequent occurrence, may be very troublesome. Common though it is behind a stricture, it may occur apart from this; but usually there is some immediate exciting cause. We see it in patients undergoing catheter drainage for an enlarged prostate or for bladder disorders and so forth. It may be limited to pronounced oedema and lymph-

angitis of the skin of the penis, often near the penoscrotal junction. The spongy portion alone or the cavernous bodies may be involved. This inflammation may subside if the catheter is discarded and anterior irrigation of the urethra is instituted, together with the use of hot fomentos. Abscess formation is, however, wont to occur, and the abscess may point either extraurethrally or intraurethrally and be followed by a fistula that is difficult to heal. Connective tissue deposits of a lasting nature may form in either the spongy or cavernous bodies, producing deformities of the penis, naturally worse after erections.

As soon as there is any evidence of fluctuation an incision should be made and drainage carried out. If there is a chance of evacuating the pus *per urethram*, it is far better to do so, inasmuch as an intraurethral sinus is less troublesome than an extraurethral fistula. Unfortunately extraurethral opening usually becomes necessary, as the patient is often seen too late. However, a fistula does not always develop. The following is the report of such a case.

M.S., aged sixty-five years, underwent a Harris prostatectomy at my hands and progressed normally until the fifteenth day after operation, when his temperature, previously normal, rose to 38.7° C. (101.6° F.) and he complained of a burning pain in the lower part of the abdomen. The urine contained motile bacilli and streptococci. Three days later a swelling appeared at the penoscrotal junction, tender and red. Hot fomentos were applied and the catheter was discarded in favour of an Irving's box. Two drachms of pus were expressed *per urethram* two days later and there was a purulent discharge for a week. By the tenth day the urethral condition was much improved. The patient was passing urine naturally and well. There is, however, a *cul-de-sac*, in which urine collects after micturition. Urethroscopy has not yet been performed.

Non-Specific Urethritis in the Female.

Though urethritis in the female is usually gonococcal, nevertheless infection with other germs does occur, notably with the colon bacillus, although this is uncommon. Tuberculous urethritis must be very rare, and is said to be always secondary to infection of the kidneys and bladder. These disorders need not detain us; but there is a type of non-specific urethritis occurring sometimes in single women, but much more commonly in married women, in which there is no suggestion or past history of gonococcal infection. It is a non-purulent urethritis known as granular urethritis and sometimes erroneously called cystalgia.

Of all the minor ailments in women this is perhaps the most distressing. While it may be found at any age after puberty, it is most common in the active sexual age, in young married women and in women about middle age whether single or married. It is uncommon in young unmarried women, but I have seen it in patients past the menopause and in a few older women. Frequency of micturition is the chief symptom, often the only one, and is apt to be more troublesome in the morning than during the day. Nocturnal frequency of micturition does not seem to be a feature, and if present is less pronounced.

Dysuria, when it accompanies the frequency, may be either a burning during the act or pain immediately before or after the act. In these cases there is usually also urgency of the most imperative kind.

Other symptoms are a sense of incomplete emptying, suprapubic pressure, and sometimes hæmaturia. This is terminal and amounts to the passage of only a drop or two of blood, accompanied by a brief cutting pain. Occasionally the hæmaturia is represented by a few tiny clots. Rarely is there sufficient blood to mix with the urine and suggest a more serious lesion in the bladder. There may be some irritation about the vulva.

On inspection there may be some unnatural redness about the meatus, and if the urethra is milked with the finger in the vagina a bead of opalescent greyish exudate may be made to appear. A stained smear may reveal various organisms; those most in evidence may be diphtheroids. There are very few pus cells, only large epithelial cells. In other words, usually the smear is like any other smear from the female urethra. Cystoscopic examination and all other investigations usually reveal no abnormality, and it is only when a urethroscopic examination is carried out that the disorder is discovered.

Urethroscopic examination is much less often carried out on the female, and on the whole is much more exacting, because it requires either a very close vision or a fore-oblique telescope if water distension is used; if not, the patient must be examined in Trendelenburg's position while her bladder is empty, so that urine will not obscure the endoscopic view. The mucosa is congested, particularly in the inner half or one-third of the urethra; it has lost its smooth glistening appearance, owing to submucous round cell infiltration. There is a generally roughened appearance, with numerous rugæ, in which large turgid vessels figure prominently. Not infrequently, in addition, there is a polypoid condition about the internal meatus, and these fronds of translucent mucosa can be seen waving in the stream of irrigating fluid.

Treatment is either palliative or curative.

By way of palliative treatment, bladder irrigations have often been tried, even though no pus is found in the urine; but they are usually of not much avail. General measures calculated to render the urine bland, such as the avoidance of condiments and spiced foods and the taking of diluent drinks, may be carried out. Sodium bicarbonate may be added to the usual potassium citrate and hyoscyamus mixture, in order to alkalize the urine. Immediate local treatment, such as long hot douches, hot sitz-baths, the application of hot towels to the perineum and attention to the bowels, may give temporary relief. In addition, hæmorrhoids should be treated. If the *cervix uteri* is eroded and endocervicitis is present, this should be treated too, usually in conjunction with the treatment of the urethra. The latter will be described in a minute. Careful inquiry into the sexual life may disclose some faulty habit

conducive to congestion of the parts, the correction of which may help in the cure.

Notwithstanding all this good advice, many patients are unrelieved by these measures alone, and something more direct and active has to be done. Curative treatment is along the following lines. The urethra should be dilated with graduated dilators. Afterwards a 10% to 20% solution of "Argyrol" or a 1% or 2% solution of "Mercurchrome" should be instilled. Perhaps better still is the use of a 2% solution of silver nitrate. The dilatation massages the mucosa, stretches the submucosa, squeezes the alveoli of the few glands present in the female urethra, and at the same time tends to remedy any slight stricture formation, a not very rare condition in the female. This remedial action of the sound is the explanation of the relief from symptoms that sometimes almost miraculously occurs merely after a cystoscopic examination, even when the bladder has been found normal, the real pathological condition missed and nothing further done.

The treatment referred to is given once or twice a week and very often the symptoms will disappear with no further treatment. If this does not give relief the application of a 10% solution of silver nitrate to the upper part of the urethra and the bladder neck through an endoscope tube often gives striking results. This usually accentuates the disorder for a couple of days, and may cause a little terminal hæmaturia at first. It may be repeated several times, but not more often than once in ten days or a fortnight. Some cases are more difficult, particularly those of the polypoid type; in these circumstances the thing to do is to take the patient into hospital, coagulate the polypi with the diathermy electrode, and make three or four linear cauterizations deep to the urethra. I have treated several patients in this way with gratifying results, though the method is not infallible.

I have described this disorder at some length because I believe it is not well known (and if known is not remembered and looked for), and because it is not uncommon.

One other abnormal condition of the female urethra requires mention, namely, periurethritis with abscess formation, and as an occasional sequel the formation of a fibrous nodule or a diverticulum. Periurethritis usually appears as a tender swelling in the urethro-vaginal septum, and commonly goes on to abscess formation. Sometimes the condition is more or less acute, but usually it is more indolent and of a chronic nature. It usually follows a urethral injury or bruising from any cause, such as rough coitus, careless use of the douche or instrumentation. Though such an abscess is slow to point and burst, it may do so into the urethra or vagina or into the vestibule. Like abscesses elsewhere, it may spontaneously heal, but it may require incision and drainage. Occasionally a sequel to an indolent infection of this sort is the formation of a nodule of fibrous tissue. The mass can be felt in

the anterior vaginal wall; it is ill defined and will not shell out at operation. More commonly a diverticulum of the female urethra develops as a sequel. The diagnosis is not difficult if adequate methods are employed, for example, urethroscopy and urethrography.

The treatment is surgical and consists of extirpation under a general anæsthetic. The following is a case illustrating some of the points referred to:

The patient, a middle-aged female, of the loose moral, rather alcoholic type, complained that when she passed urine a little seemed to come out beside the urethra. This did not occur every time, however, but occasionally or at intervals. She was examined gynaecologically and later cystoscopically by one of the senior resident medical officers at the hospital and no abnormality was found. The disorder would seem to be cured after some days' catheter drainage and then would reappear.

She was referred to me with the idea that she might have an aberrant ureter opening into the vestibule. Close questioning and the employment of the indigo-carmin test did not lend support to this hypothesis, and so I decided to examine her urethroscopically. With this instrument I could see the opening into the urethra and was able to pass a ureteral catheter into it. On passing it a little further I saw it appear under the mucosa of the vestibule and finally come through a minute hole there. A subsequent urethrogram revealed the extent of the diverticulum and indicated the surgical treatment necessary.

Acute Prostatitis and Vesiculitis: Prostatic Abscess (Non-Specific).

Inflammation of the prostate is, of course, very commonly gonorrhœal or post-gonorrhœal.

Non-Specific Prostatitis.

Non-specific prostatitis, however, is not uncommon. Sometimes the prostatitis that complicates gonorrhœa is not solely due to the gonococcus, but to a secondary mixed infection with organisms such as the *Bacillus coli*, the staphylococcus, the streptococcus or the *Bacillus proteus*, which persist after the gonococcus has disappeared. Hæmatogenous infection is well known to occur in typhoid fever and scarlet fever; but it is not so well known that hæmatogenous prostatitis may complicate acute respiratory diseases, particularly pneumonia, and arise as a secondary infection in staphylococcal infections of the skin and bones. The condition is then not so much a local disease as one manifestation of a general focal infectious state. Acute prostatitis, however, sometimes follows urethral instrumentation, acute non-specific urethritis or cystitis.

Acute Vesiculitis.

Acute vesiculitis is so closely associated with acute prostatitis and the symptoms are so similar that the two must be considered together clinically. However, when the vesicle becomes very acutely inflamed it may give rise to symptoms and signs very like an acute intraabdominal disorder, and if it is on the right side may simulate appendicitis.

Acute Prostatitis and Prostatic Abscess.

On the other hand, the point of clinical importance with regard to acute prostatitis is to dis-

tinguish it from prostatic abscess, which may require surgical intervention. The symptoms of these disorders are those of any acute infection in the posterior part of the urethra or bladder, in addition to certain characteristic symptoms, and depend on the severity of the attack. In mild cases all that is complained of is a feeling of weight in the perineum, together with frequency of micturition and delay or difficulty in starting the stream. In severe cases, and especially if an abscess has developed, both the local and general symptoms are much more pronounced and distressing. The pain in the perineum may be quite intense and may aggravate the greatly increased frequency of micturition. Any movement which puts tension on the ham-string muscles or the *levator ani*, or both, such as sitting down or crossing the legs or defæcation, may cause pain. Painful erections may add to the patient's misery, and as the swelling of the gland increases urination becomes more difficult, and in the presence of an abscess retention of urine is common. The patient by this time looks ill and has a temperature of 39.5° to 40° C. (103° to 104° F.), with or without rigors.

On examination the urine is found to be turbid with pus. Rectal examination reveals the prostate to be enlarged either as a whole or on one side; its normal elastic consistency is lost and it feels tense and hard, or, if a large abscess has formed, soft and fluctuating. The examination causes great distress.

Sometimes the rectal examination is sufficient to cause rupture of an abscess situated near the prostatic part of the urethra, with speedy relief of the symptoms, or, if retention of urine is present and a catheter is passed, this in itself or together with gentle pressure may bring about the same result. Fortunately spontaneous or assisted rupture into the urethra is a common sequel to prostatic abscess, with relief to all concerned in the case.

Treatment consists of rest in bed, with perineal and suprapubic hot stupes and occasional hot sitz-baths. Two-way rectal lavage with hot fluid is soothing in the less acute cases. Suprapubic cystotomy is a rational though not an essential means of relieving the local symptoms in the more acute cases, and in those in which retention of urine is a feature. All local treatment, such as posterior irrigations, the passage of instruments or the use of instillations into the prostatic part of the urethra, are contraindicated for fear of an acute epididymitis being induced. The administration of excess fluids and of an alkaline diuretic mixture, in addition to the use of an opium and belladonna suppository, is helpful; but morphine in adequate doses should not be withheld in really acute cases.

After the bowels have properly opened once, no meddlesome aperient is advisable for two or three days.

If abscess has developed and has not discharged spontaneously into the urethra in seventy-two hours, and particularly if the temperature is elevated and

rigors occur, and if the pain in the perineum persists with increase in the local swelling and fluctuation in spite of palliative treatment, the abscess must be opened by the perineal route. If this is not done it may burrow and rupture into the bladder or rectum. With the patient in the lithotomy position an incision is made from a point in the middle line 2.5 centimetres (one inch) in front of the anus, in the region of the bulb, backwards and outwards, towards the anterior extremity of the ischio-rectal fossa on each side. After the superficial fascia has been divided the incision is deepened by blunt dissection until the lower margin of the triangular ligament can be felt in the forepart of the incision. The index finger of the right hand now burrows into the space between the triangular ligament and the rectum, where the swollen prostate will be felt. Usually it is sufficient to bore into this swelling with a pair of artery forceps in order to strike pus.

Where a more thorough examination of the prostate is required, it may be necessary to insert a gloved finger of the left hand into the rectum, and with this as a guide direct the point of the scalpel into the abscess. Once the abscess has been struck it must be opened up more freely and a large tube inserted. The wound is irrigated daily and the tube shortened little by little as the cavity closes from the bottom.

The following is the report of a case of prostatic abscess with recovery:

A.L., a single man, aged thirty-seven years, was admitted to hospital suffering from pain in the perineum and across the small of the back of three weeks' duration. Micturition was frequent and the urine was in small amounts. The patient had a poor physique and looked ill. His temperature was 38.9° C. (102° F.). The pain increased and he required hypodermic injections of morphine, in spite of being given two tablets of "Prontosil" three times a day after meals.

On his admission to hospital his prostate was only slightly enlarged, but very tender. On the day of operation the swelling of the prostate had increased in size, and fluctuation could be felt on the right side. The abscess was opened perineally and a tube drain inserted. Four days later there was still an indurated mass in front of the incision, further loculi were broken down, and more pus was set free. After that he made a quick recovery. Culture of the pus from the abscess contained streptococci, staphylococci and *Bacillus coli communis*. No gonococci were found in the prostatic fluid on his admission to hospital.

The following is the report of a fatal case of prostatic abscess:

A.S.M., a married man, aged twenty-eight years, was found in one of the medical wards by the surgical registrar. He was being treated there for pyelitis, having had some pain in the right hypochondrium, severe, but never radiating to the groin. There was also some tenderness in the right loin. The temperature was of the swinging variety, running up to 38.1° C. (100.6° F.) at times. A plain skiagram of the renal tract revealed no abnormality. The kidney was palpable and slightly tender. He had a chronic ulcer on one side of his tongue, from which a snipping was taken. It was diagnosed as a squamous-celled epithelioma, grade I.

When I saw him a fortnight after his admission to hospital there was only slight tenderness of the kidney. A right epididymitis was stated to be subsiding, though

swelling and tenderness were still present. *Per rectum* the right vesicle was found to be enlarged and tender. My diagnosis in the notes was "right vesiculitis with perivesiculitis, with possible formation of perivesicular or prostatic abscess". Rectal lavage with hot fluid was ordered and perineal incision was mooted.

His temperature had risen to 38.4° C. (101° F.) over the previous two days, and in the next two days rose to 38.9° C. (102° F.). Perineal drainage was then carried out and pus was evacuated. In spite of this his temperature assumed a definite septic swing to 38.4° or 38.9° C. (101° or 102° F.). He was again taken to the operating theatre; the wound was opened and some more pus was evacuated with sinus forceps. After this his temperature lost its swinging character and finally dropped, but never completely to normal; it remained at between 37.8° and 38.4° C. (100° and 101° F.) with a few remissions.

The intravenous administration of acriflavine was ordered and his temperature dropped to normal after some days. Then radium needles were inserted in his tongue. That day his temperature shot up to 39.1° C. (102.4° F.) and remained elevated until his death five days later. He became strange in manner before his death, then restless and noisy; a right facial paralysis developed and then he became unconscious. Lumbar puncture revealed the cerebro-spinal fluid to be turbid and under slightly increased pressure. No *post mortem* examination was allowed. Death was due to a septic cerebral condition.

On going through the records at the Brisbane Hospital over the past five years, I was able to find only 41 cases of non-specific prostatitis diagnosed as such. It must be remembered that many of these patients do not go into hospital for treatment. Many are attending as out-patients, and their records are not filed under disease rubrics, but only alphabetically. The men ranged in age from 18 to 73 years. Twenty-five were married, thirteen were single, and three were widowers.

The incidence according to age groups was as follows: 18 to 30 years, nine; 30 to 40 years, seven; 40 to 50 years, seven; 50 to 60 years, eleven; 60 to 73 years, seven.

The infecting organisms were Gram-positive cocci, *Bacillus coli communis*, Gram-positive diplococci and *Bacillus pyocyaneus*. The incidence of these was as follows:

Organism not stated (no gonococci; result of gonococcal complement fixation test negative in seven cases)	17 cases
No organisms found on examination	3 cases
Gram-positive cocci and bacilli, but no gonococci	10 cases
Motile or Gram-negative bacilli	8 cases
Gram-positive diplococci and no gonococci	2 cases
<i>Bacillus pyocyaneus</i> found on culture	1 case

The diagnoses were the following:

Simple non-specific prostatitis	31 cases
Prostatitis with vesiculitis	4 cases
Prostatitis with epididymo-orchitis, acute	4 cases
Prostatitis with epididymo-orchitis, chronic	2 cases

It was extremely difficult to find a predisposing cause or focus of infection from the histories; but I would hazard the causes shown in Table I in this connexion.

Congenital absence of one kidney and ureter was present in one case.

Early infected hydronephrosis, an acute staphylococcal infection, occurred in one case. The patient was aged thirty-one years.

TABLE I.
Suggested Causes of Non-Specific Prostatitis in 41 Cases.

Cause.	Acute Cases.	Chronic Cases.
No clue	6	16
Mild stricture	2	2
Obstruction at vesical neck	1	2
Urinary tract infection	5 ¹	—
Pyorrhea	1 ²	1 ³
Recent bone and joint infection	2	—
Lobar pneumonia	2	—
Cholecystitis	—	1

¹ One patient had prostatic calculi.

² The patient was aged eighteen years.

³ The patient was an old man.

The acute *Bacillus pyocyaneus* infection occurred in a youth, aged eighteen years. No tubercle bacilli were found.

I can give particulars of eight cases of prostatic abscess in which the abscess had to be opened by the perineal route. The infecting organism in all except three was the staphylococcus, either alone or in association with Gram-positive bacilli. Of the other three cases, in one case the infecting organisms were streptococci, staphylococci and *Bacillus coli communis*, and in two the pus was not examined. In none was there any likelihood of a gonorrhoeal infection, or else the organism was excluded by smear or by the gonococcal complement fixation test. All patients except one recovered.

Chronic Vesiculo-Prostatitis of Non-Specific Origin.

As in the acute cases, the symptoms of chronic prostatitis and chronic vesiculitis overlap considerably, and in fact the two conditions are often present together. However, frequently one or other condition predominates, and it is particularly chronic vesiculitis that is missed. There are, nevertheless, some symptoms and physical signs that point to vesiculitis, and these will be mentioned later.

The fact that the treatment of chronic prostatitis is in the main suitable for vesiculitis makes the necessity for correct differential diagnosis less important than it otherwise would be; but on the other hand it is most essential in the more resistant and troublesome cases to make an academic diagnosis so that specialized treatment may be applied.

Non-specific chronic prostatitis is said to be as common as chronic tonsillitis. It is a chronic pyogenic infection of the alveoli of the prostatic glands and the surrounding areolar tissue, and, like the acute condition which it may follow, may have its origin in direct extension from the urethra or invasion from the blood stream.

I do not doubt that the commonly held theory still holds good, that whenever a state of chronic congestion continues for a long time the resistance of the prostate and vesicles is lowered, so that a non-specific infection is prone to develop. It is for this reason common to find it in the erotic type of young man, in older men of sedentary habits with hemorrhoids, and in steady drinkers.

It is not surprising that prostatitis and vesiculitis so easily become chronic, when one remembers the numerous racemose glands with branching ducts opening through narrow main ducts in the case of the prostate, and in the case of the vesicle the numerous blind recesses and pockets that open through the single extremely narrow common ejaculatory duct.

The symptoms are many and varied, but may be mainly urinary or mainly genital in character; or on the other hand there may be complaint of remote and abnormal conditions.

Urinary Symptoms.

The urinary symptoms may be mild or absent; but usually frequency of micturition, dysuria, a feeling of wanting to void after the bladder is empty, and sometimes terminal pain are present. These symptoms are as a rule indicative of an accompanying posterior urethritis or trigonitis.

Genital Symptoms.

The genital symptoms are pain and sexual disturbances. The pain may be local or referred, perineal, testicular or anal, and it is present in some degree in every case. It may be only a sense of discomfort or dull soreness, or a bearing-down or dragging sensation. There may be an ache in the testicles, a feeling of coldness of the scrotum, formication in the urethra, or pain extending over the suprapubic region and down the spermatic cord. Frequently there is a complaint of fullness, itching and burning about the anus. Chronic prostatitis is a common cause of *pruritus ani* in men. The common situations in which pain may be radiated are the lumbar region, the sacro-iliac region and the thighs.

Sexual Symptoms.

The sexual symptoms may range from mild ineptitude to complete impotence. Erections may be insecure, painful or absent; ejaculations may be premature, delayed, bloody or painful ejaculations, or the ejaculation may occur without erection. Frequent nocturnal emissions and spermatorrhœa also occur.

Added to these there is a train of neurotic symptoms, varying from a mild apprehensive or irritable state to a depressive condition, for example, irritability, nervousness, depression and lassitude. These conditions may be grouped under the heading of sexual neurasthenia, the commonest being depression.

Remote Symptoms and Conditions.

The remote symptoms and conditions vary greatly according to the nature of the organism responsible and its toxin, to the extent of the infection, and so forth. In some cases there may be only slight rheumatism or neuritis, or definite rheumatism, chronic arthritis, synovitis, fibrositis *et cetera* may be present. It is on account of these conditions, which are really secondary infections through the blood stream, rather than for the local disease

itself, that some patients seek medical aid. We therefore arrive at the position where we must bring the prostate (and the secondarily infected vesicle) into line with the kidney and epididymis as being a common primary or subsidiary depot of focal infection.

Differential Diagnosis of Chronic Vesiculitis and Chronic Prostatitis.

From the point of view of differential diagnosis of the two conditions, chronic prostatitis and chronic vesiculitis, it may be said as a general rule that in chronic prostatitis the commonest single symptom is frequency of micturition with a certain amount of pain at the end of the act. The more usual genital symptoms are painful erections, nocturnal emissions and premature ejaculations.

In chronic vesiculitis characteristic symptoms are pain after coitus and the occurrence of blood-stained emissions, in which the semen and the blood are mixed. Other urethral conditions may cause unmixed hæmatospermia.

Diagnosis.

The diagnosis of these disorders rests chiefly on the result of examination *per rectum* and on the microscopic appearance of the expressed secretion. To the examining finger the prostate may feel rather enlarged or diminished in size, but the important feature to note is its consistency. A prostate that is the seat of chronic inflammation is no longer uniform and elastic to the touch, but feels hard and has an irregular surface. On massage tenderness may be complained of as the finger passes over certain areas. The expressed secretion, instead of having the uniform opalescent appearance of normal "prostatic fluid", contains numerous opacities and may appear quite purulent even to the naked eye. The presence of pus cells and of organisms will be confirmed by microscopic examination. A few epithelial cells may likewise be present, but these are of little significance. Urethroscopic examination will also reveal changes in the posterior part of the urethra, either in the form of a chronic inflammation of the mucous lining or of an enlargement of the verumontanum with, in certain cases, polypoid outgrowths of granulation tissue or maybe an old abscess cavity. The existence of a posterior urethritis accompanying the infection will also be made evident by examination of the urine and the discovery therein of pus, organisms and comma threads. X ray urethrography may also be of great assistance.

An important point in the diagnosis of chronic vesiculitis is that the urine voided naturally may be perfectly clear. Massage of the vesicle may produce a normal secretion if the prostatitis has cleared up, unless a closed vesicle focus can be broken down and the vesicles made to drain. More usually, if the vesicle can be firmly stripped, the urine voided after the stripping (or the glass of cold water held for its reception) will contain flakes and worm-like casts of the vesicle.

The symptoms of prostatic and seminal vesiculitis have been aptly described as pus, pain and rheumatism—one might well say "P.R." It has been said that 75% of cases of obscure backache in men are secondary to prostatitis and particularly to vesiculitis, and that every male patient with low backache should be examined *per rectum* for what Belfield has described as the male "pus tube". As Wesson puts it so nicely:

... a patient with a pain in the lower back or one in the groin that extends suprapubically toward the mid-line below the umbilicus, or down into the scrotum, with a prostate and seminal vesicles that are nodular and indurated on palpation, and whose prostatic secretion contains pus and dead sperms, and who complains of an exacerbation of the pain on massage, has not a beginning hernia or "sacro-iliac slip". He has a prostatic backache. The epididymitis that frequently occurs spontaneously is not due to a strain or a "partial torsion of the testicle", but to an extension of his prostatic infection down the vas.

Treatment.

It is notoriously difficult to eradicate the infection in these two diseases; but the realization of the part played by the vesicles in perpetuating the condition has led to improvement and refinement in the methods of treatment.

Attention to the general health, the search for and the removal of foci of infection, a holiday or week-ends at the seaside, all are helpful. Three rules of living must be enforced: no alcohol, no sexual excitement, no riding or cycling. These are the three prostatic sins. In addition, avoidance of spiced food and condiments, attention to the bowels, hot baths and exercise relieve the local congestion.

The chief local measures are: posterior irrigations carried out by Janet's method with a fairly hot solution of potassium permanganate, acriflavine or oxycyanide, prostatic and vesicular massage, and the occasional passage of a full-sized sound.

The sulphanilamide group of drugs may be tried; but they are not so effective as in other urinary infections. The intravenous administration of a 1% solution of "Mercurochrome" or of acriflavine, ten cubic centimetres given every four or five days, may accomplish something; and the intravenous or intramuscular administration of five to ten cubic centimetres of a 10% solution of calcium gluconate is beneficial in the subacute case. Two injections of "S.U.P." followed by two of manganese butyrate may be used also.

While it is true that many patients with prostatitis are greatly benefited by a course of prostatic massage every five to seven days for six weeks, and that in the blocked-vesicle type of case the obstruction in the end yields to massage and stripping, still other and more direct methods of treatment have come into vogue in the more troublesome cases.

In the case of the prostate, gland puncture may be employed. Spinal anaesthesia or anaesthesia induced by intravenous injection is used. A needle is introduced through the skin of the perineum, 2.5 centimetres (one inch) above the anal margin,

until it is felt by a finger inserted in the rectum, which guides it into one lobe of the prostate. Five cubic centimetres of iodine in potassium iodide solution, or of a solution of 1% "Mercurochrome" with or without glucose added, are slowly injected. The needle is then partially withdrawn and inserted in the other lobe, and the process is repeated and massage is applied to disseminate the drug through the prostatic tissues. In small glands, or if the surgeon prefers, perurethral injection can be carried out with a specially designed needle under direct vision through a McCarthy panendoscope.

Although this appears to be a rational procedure at first sight, there is some doubt as to its efficacy and as to whether the drug really reaches the diseased foci in the prostate. However, this is the instrument used. This procedure may be combined with a vasotomy and irrigation to be described next.

In the case of prostatic calculi associated with prostatitis the procedure adopted may be either perineal prostatolithotomy or suprapubic enucleation of the gland, if it is enucleable. In the small, hard, fibrous prostate with bar formation, in which transurethral resection is now usually carried out, it is stated that stones may be set free. I have never had a case of this type; but I have often encountered stones at the suprapubic enucleation of an enlarged prostate.

With regard to vesicles, if massage treatment fails, vasotomy is indicated and should not be a last resort, as it has been in the past. The cord is delivered through a small incision near the external abdominal ring and the vas is isolated over the handle of the knife, incised longitudinally, and a blunt-pointed needle is inserted. Five to ten cubic centimetres of a 5% solution of argyrol or of a 1% solution of "Mercurochrome" are injected. The vas may be fixed temporarily in the skin and the needle or lachrymal duct cannula left *in situ*, or a piece of silkworm gut may be used. Vesicular lavage may be repeated each day for five days while the patient is confined to bed. At the end of this time the vas is allowed to drop back and the skin is sutured or strapped. Lavage is quite efficacious and is indicated particularly in rheumatism and joint disorders. An alternative method is catheterization of the common ejaculatory duct with a special instrument. This is said to be simple, but I have never found it so; moreover, when I have succeeded in inserting the catheter a centimetre or so it has seemed to me that the obstruction or narrowness of the duct has prevented further progress and the fluid has regurgitated.

In resistant cases, particularly if there are remote conditions and if the patient is suffering in general health, a better procedure is vesiculotomy and drainage by open dissection via the perineal route. I have had, on the whole, gratifying results with the few patients I have treated in this way.

Non-Specific Epididymitis.

Acute Epididymo-Orchitis.

Swellings of the testicle, to use the term testicle loosely, may be either orchitis, epididymitis or epididymo-orchitis, according to which structure is primarily and mainly infected, and according to the nature of the infecting organism. For instance, gonorrhœal infection, even when acute, is essentially epididymal, although the accompanying œdema may spread to the visceral layer of the *tunica vaginalis* and acute hydrocele may develop. It may then be termed epididymo-orchitis, provided that one remembers that the parenchyma of the testis is not involved. The reverse may hold, too, in some acute disorders of the body of the testis.

Non-specific acute epididymitis or epididymo-orchitis may arise in two ways: (i) by direct extension along the cord (whether this is via the lumen or the lymphatics, or both, is still not definitely decided); (ii) by infection through the blood stream. Accordingly we may have, for example, an acute *Bacillus coli* epididymo-orchitis and an acute tuberculous epididymo-orchitis. Systemic diseases of staphylococcal origin and also infections of the respiratory tract may give rise to acute metastatic epididymo-orchitis. With the orchitis of mumps and typhoid fever and the specific orchitis of tertiary syphilis I shall not deal because of lack of time and the title of this lecture.

Secondary Non-Specific Epididymitis (or Epididymo-Orchitis).—Epididymitis is a common complication of urethral stricture, prostatic enlargement and vesical calculus; it often follows instrumentation of the deep urethra, drainage by indwelling catheter, and operations on the bladder or prostate. In fact, during any infection of the urinary tract, particularly *Bacillus coli* infection, a history of recurrent attacks of epididymitis is not unusual. You must all have encountered such cases.

Epididymitis is prone to occur in the cryptorchid. The following is an instance:

W.S.B., aged sixty-two years, came to my out-patient department complaining of frequency of micturition and of pain at the end of the act. Sometimes there was simply pain in the hypogastrium. He also complained of a "lump in the groin", and this had become tender and sore lately.

On examination his urine was found to be turbid with pus and debris, and the tender swelling was a partially descended testis at the external abdominal ring. *Per rectum* the prostate was felt to be slightly enlarged, but not tender.

The patient was ordered hot fomentos and a mixture, and was sent for a plain X ray examination of the urinary tract. This revealed a vesical calculus the size of a grape. He was admitted to hospital and the calculus was removed suprapubically, the swelling in the testis having settled down. However, he returned again later on account of recurrence of the epididymitis in the maldescended testis and of troubled micturition. On the second occasion the testis was removed and cystoscopy was performed. Subsequently, under spinal anaesthesia, electric prostatic resection was carried out on account of bar formation.

Acute Metastatic Non-Specific Epididymitis.—Any epididymitis that occurs during a systemic disease without evidence of infection of the genito-urinary tract is probably metastatic. It occurs

most often after infections of the upper part of the respiratory tract, such as pneumonia, influenza, infections of the nose and accessory sinuses and tonsillitis, and after tooth extraction. It is seen also in acute and chronic coccal infections, particularly those of the skin, such as furunculosis. In some cases no demonstrable focus can be found.

The explanation of the lesion is somewhat as follows. During the course of any twenty-four hours there are undoubtedly bacteria circulating in the blood stream of many individuals. These are subsequently removed from the body, it is believed by the kidneys, leaving no trace. But if a *locus minoris resistentiae* exists from any cause, whether from disease or trauma, a diseased focus is started. While this may occur in any tissue in the body, the parenchymatous organs figure largely in this phenomenon. One can call to mind the parotid gland, the pancreas, the prostate and testis. Reasoning along these lines, I can see no reason why the epididymis should be picked out; but Belfield has put forward the following explanation, based on embryological data. In the human embryo the mesonephros degenerates ultimately, until only some half-dozen tubules persist, which separate into a cranial and a caudal group. In the cranial group the collecting portions separate from the secretory portions. The free ends of these collecting tubules unite with the tubules of the *rete testis* to form the head of the epididymis. The caudal portion forms the *vas deferens*. Hence it is considered that the epididymis pathogenically is excretory in nature, or, as Belfield puts it: "While the kidney is provided with a new and private sewer, the ureter, the testis continues to use the frog's old urinary duct, now called epididymis and *vas deferens*". These facts, coupled with other factors (such as the poorer lymphatic drainage of the epididymis, certain tissue affinities for different organisms, the protection of the testis by its *tunica albuginea* from trauma, should it occur), are all marshalled as the *raison d'être* of this particular type of epididymitis.

Treatment.—The symptoms and signs of any acute epididymitis are too familiar to need description here, and the routine treatment of the disorder need not be detailed. In the great majority of cases the lesion will settle down with treatment by rest, elevation of the part, heat and so forth. If resolution does not occur, however, the lesion either suppurates or continues through a subacute to a chronic stage. *Bacillus coli* and staphylococcal epididymitis tend to suppurate, and unless early operation is resorted to, the body of the testis will become involved. However, in acute epididymitis it is always worth while to try the effect of intramuscular or intravenous injections of five to ten cubic centimetres of a 10% solution of calcium gluconate every day or two.

In favourable cases early reduction of the swelling and diminution of the pain occur. When there are no signs of resolution in seventy-two hours, or when

the temperature remains high, and when more than one recrudescence at the most occurs, early surgical intervention is both rational and curative. It will probably save the patient a recurrence, lessen the likelihood of sterility from that testis, and give immediate relief from pain. A lateral incision is made on the outer side of the scrotum to expose the cord and epididymis. The *vas* may be dealt with as in simple or prolonged vasotomy, and any secondary hydrocele is evacuated by puncture. An incision is now made in the sheath of the epididymis, and the edges are separated a little; the epididymis is then punctured with the point of the scalpel so that any abscess or collection of small abscesses may be discovered. A glove drain is laid along the incision and the sheath sewn over it. The wound is closed and the drain is removed on the third or fourth day. In less severe cases a method of closed epididymotomy may be used with good effect. The epididymis is punctured along its whole length through the skin with a large bore serum needle, from 10 to 40 or more punctures being made, according to the size, tension and severity of the lesion. Even if no pus is exuded or sucked out by a syringe and only serous fluid escapes, there is often great relief to the patient.

Chronic Epididymitis (Non-Specific).

In chronic epididymitis the delineation of the disease condition is much more pronounced than in acute infection. This most commonly follows the acute or subacute infection, but it may arise independently. Like the acute form, there are the two aetiological types.

Secondary Chronic Epididymitis.—If the secondary type of chronic epididymitis does not follow some genito-urinary disorder, it may be discovered accidentally as a nodule, usually near the tail of the epididymis, or because of an ache in the testicle or along the cord, and then a rectal examination will probably reveal an indurated condition of the prostate and vesicles. Some of the fluid should be caught on a slide and examined for pus and organisms. This may give the key to the situation and rational treatment.

Metastatic Chronic Epididymitis.—The hæmatogenous type, coming on insidiously as it does, may be diagnosed only when the prostate and vesicles are normal and when there is no pus in the fluid expressed and urinary infection can be excluded by proper urological investigation. Such a patient will usually give a history of poor health and perhaps of some respiratory infection. Now it is the differential diagnosis of these insidious, more or less indolent swellings in the epididymis that I wish to discuss tonight.

The lesions to be differentiated are the following: (i) trauma, (ii) post-gonorrhœal epididymitis, (iii) non-specific epididymitis, (iv) tuberculous epididymitis, (v) syphilitic epididymitis, (vi) filarial epididymitis, (vii) tumour of the epididymis.

Causes.

Trauma.—Injuries of the epididymis and testicle of any consequence are always linked together. There may be contusion of the skin and hæmatocele, and the history will always be of assistance. Severe injuries of the testicle are accompanied by acute agonizing pain and shock. Therefore, when the epididymis alone is palpably involved without classical symptoms of injury, one may be sure that infection is responsible for the abnormal condition rather than an alleged injury. Also, with the exception of hæmatogenous infection, epididymitis is always secondary to some local genito-urinary disorder, of which in many cases palpable evidence will be found *per rectum*.

Preceding Gonorrhœal Infection.—In post-gonorrhœal epididymitis the history will be typical, the urine may contain pus and shreds, and gonococci may be found in a centrifuged deposit. *Per rectum* the prostate and vesicles will be found to be involved; the expressed fluid will contain pus and perhaps gonococci. If not, the gonococcal complement fixation test will help in the determination of the gonorrhœal origin of the condition.

Differential Diagnosis.

In its more acute form non-specific epididymitis may have to be differentiated from acute tuberculous epididymitis. In tuberculous epididymitis the patient usually has some other acute tuberculous lesion in the lungs, joints, intestines or genito-urinary system, and the diagnosis of this will put the clinician on the right track. Metastatic epididymitis is seen most often after infection of the upper part of the respiratory tract or in acute or chronic coccal infections of skin and bone.

In tuberculosis the acuteness of the inflammation will diminish as in gonorrhœal and non-specific epididymitis; but the degree of infiltration will not regress, but progress. Slow regression of infiltration should suggest tuberculosis.

In its chronic form non-specific epididymitis may simulate chronic tuberculosis very closely, with its slow insidious onset, indurated nodules and absence of tenderness. Tuberculous epididymitis begins in the *globus minor* more often than in the *globus major*, and in this respect resembles the post-gonorrhœal type, whereas non-specific epididymitis is more generalized over the epididymis, at all events at first. In tuberculous epididymitis there may be changes in the skin and loss of mobility of the testis within its coverings and later a dimpling and attachment to the skin.

The nodules of non-specific epididymitis are on the whole less discrete and less well defined, while beadings along the vas are very suggestive of tuberculosis. Furunculitis but no heading may be present in secondary non-specific and gonorrhœal epididymitis. In the metastatic non-specific form no abnormality will be found *per rectum* or by urological and radiographic examination; but in the other two types there will be signs in the prostate or vesicles, or both. A search may be made

in the urine or "prostatic fluid" for tubercle bacilli. The tuberculin test may be applied. Epididymitis due to the *Bacillus coli communis* or the staphylococcus often causes suppuration; but this is usually in the more acute stages. The presence of a sinus discharging thick pus is very significant, however, of tuberculosis. The epididymis by this time will have become craggy and indurated, and perhaps the body of the testis may have been invaded secondarily. I was able to find five cases of proved tuberculous epididymitis in the records at the hospital. All patients except one were aged between thirty and forty years. All had discharging sinuses and classical signs. In two cases the lesion was bilateral.

In secondary syphilis the infection is bilateral in the *globus major*, and the history and, of course, the Wassermann test, complete the diagnosis. Tertiary syphilis affects the body of the testis, causing the "wooden testis"; and the same may be said of cancer.

T.T., aged thirty years, married, was sent to the hospital with a letter from his medical attendant in a country town. It read as follows:

I would appreciate it if you would arrange for my patient, T.T., to be seen by a urologist. Could I have a Wassermann test done please? Also I would like an opinion of the condition of his epididymis. He has had two attacks of gonorrhœa. The testicular condition does not respond to massage, but remains unchanged.

On examination he was found to have a slight urethral discharge. The left epididymis was enlarged generally, but not tender, and hydrocele was present. *Per rectum* the prostate and vesicles were found to be irregular and indurated. Neither the urethral discharge nor the "prostatic fluid" contained gonococci. The patient's blood serum gave a ++++ reaction to the Wassermann test and also to the Kahn test. He returned to the country forthwith.

J. C. Ferrer says that in filariasis acute epididymitis may occur with the periodic manifestations and blood findings characteristic of the disease. The epididymis becomes very tender. It is stated that the *globus major* is usually the part involved, and that no hydrocele is present. The attack may last only a few hours, but may become subacute and last for four days to a week.

This author states that as the attacks recur the *globus major* becomes progressively larger until it may be felt as a small nodule above the testicle.

The final outcome of these recurrent attacks will be either a complete degeneration with necrosis and secondary infection with abscess formation, or a generalized fibrosis of the superior portion of the epididymis, in which the calcified worm may be found in section.

Thus after recurring attacks the epididymis becomes hard and irregular and the lesion simulates tuberculosis very closely.

Manson does not mention the disorder specifically, but says that chronic lesions about the groin, testis and scrotum in patients from the tropics should always be regarded as possibly filarial.

A man came into my out-patient department recently with a painful testis. He is single, aged thirty years, and came out from England fifteen years ago. He had malaria in New Guinea in 1938.

On examination the right epididymis was found to be swollen and very tender in its whole extent, and no hydrocele was present. He was given palliative treatment and his urine was examined. Macroscopically and microscopically this was clear. A twenty-four hour specimen of his urine contained no tubercle bacilli. I saw him about a week later. Although it was still quite tender, most of the swelling had subsided, except in the *globus major*. There was still no hydrocele.

Per rectum his prostate and vesicles felt normal, and normal opalescent fluid was obtained. This has been sent for examination. He denies Neisserian infection and has no discharge. He may be suffering from acute filarial epididymitis.

Another patient, P.J.M., aged forty-one years, came to the hospital in 1935 from Chinchilla. There he had developed a scrotal swelling on the right side. This had been opened, pus had been evacuated and the wound had been duly closed.

On his admission to hospital there was a hard, reddish, tender swelling in the right scrotum, which did not fluctuate. A small hydrocele was present also; when tapped it yielded twenty cubic centimetres of yellow fluid. The epididymis was then found to be hard and irregular. A week later he was operated on with a view to epididymectomy. At operation a small hydrocele was found. The testis was normal, but on investigation an indurated mass lying above and behind the epididymis was found. This was incised, whereupon yellow cheesy material escaped. The mass was then excised and sent for examination. The pathologist's report read as follows: "Chronic inflammation with resulting hard granulation tissue."

This case proves nothing, but it is interesting. The nodule which was the primary focus of disease was definitely above the epididymis and had suppurated. Was it of filarial origin?

A single hard nodule may, of course, be a fibroma, a lipoma, or an adenoma, or even a malignant growth. The possibility should not be forgotten.

As regards the treatment of chronic epididymitis, apart from orthodox measures and attention to genito-urinary foci, operation is indicated in the indolent forms if they are causing trouble, both for removal of the focus and for the relief of recurrences. Epididymectomy is usually the operation of choice. This is not a radical procedure, as the circulation of spermatozoa has been blocked by the occlusion of the tubules.

Non-Specific Chronic Cervicitis.

Inflammation of the cervix may be either of post-gonorrhoeal or of septic origin. The most common site of pelvic infection in the female is primarily in or about the cervix; thence it is apt to spread with more or less far-reaching results. A glance at the numerous glands in the cervical canal and its lymphatic drainage will recall to your minds the potentialities of chronic endocervicitis as a cause of ill health in women.

In the female it is just as common as prostatitis is in the male. Like prostatitis, it may cause infection in the neighbouring tissues and urinary organs; for example, salpingitis, trigonitis and obstruction to the lower end of the ureter, with stasis and infection of the urine and pyelocystitis. Infection by septic organisms, notably the streptococcus, can nearly always be traced to labour or miscarriage. Aside from labour and miscarriage, infection may, of course, be post-gonorrhoeal, but may follow curettage or other uterine operations *et cetera*.

Unlike the gonococcus, septic organisms do not progress along the mucous membrane into the tubes, but penetrate the walls of the uterus and cervix via the lymphatics, through the broad and sacro-iliac ligaments, setting up local parametritis of varying degrees and inflammation around the tubes and ovaries. In the same way trigonitis may arise and cause troublesome urinary symptoms. I have already mentioned periureteritis in this connexion.

The presence of a typically cervical discharge and the finding of an erosion or tear of the cervix, or both, as diagnostic signs, are familiar to you all. A very significant finding on vaginal examination is, however, not so well appreciated, namely, tenderness in the posterior fornix when the cervix is moved by the examining finger, and tenderness on pressure on the bladder *per vaginam*.

More than this I do not intend to say, except to point out that in all but mild cases other measures should be used than local paintings and superficial cauterization in the consulting room. The patient must be taken into hospital and the cervix must be repaired and cauterized in a linear fashion, or a Sturmdorf or Schroeder enucleation performed. If preferred, a scientifically accurate enucleation by Schlink's method may be performed with his enucleator. Some prefer to use the diathermy button and to carry out a thorough "cooking" of the diseased cervix. In other cases amputation of the cervix may be called for, according to circumstances.

Reports of Cases.

INTRAPERITONEAL HÆMORRHAGE FROM RUPTURE OF A GRAAFIAN FOLLICLE.

By PHILIP THOMAS, M.B., B.S. (Melbourne), D.C.O.G.,
Perth.

THIS case is submitted as illustrating an unusual cause of abdominal pain and intraperitoneal hæmorrhage, although from a review of the literature and the correspondence section of *The British Medical Journal* the condition appears to be more common than the text-books would lead one to believe.

Clinical Record.

The patient was an unmarried woman, aged twenty-seven years, whose past medical history was clear and whose menstrual history was normal, her menstrual cycle being twenty-eight days. The last menstrual period, which had begun on December 18, was stated to be quite normal in every way. There was nothing relevant in the details of her dysmenorrhœa, which consisted of backache and slight lower abdominal pain, and there was no history of any attack of a similar nature to the one under discussion.

Her history was the following. Returning from a cinema at about 11.15 p.m. on January 6, 1939 (that is, on the nineteenth day of her menstrual cycle), she felt suddenly, severe lower abdominal pain, beginning just to the right of the mid-line and rapidly spreading medially across the hypogastrium. The onset of the pain was associated with nausea, increased by standing up; but there was no vomiting. The pain was extremely severe, colicky in nature, and lasted about ten minutes. It eased off rapidly,

leaving a dull ache, which was fairly accurately and constantly localized to the lateral border of the right rectus muscle just about where it would be crossed by a line drawn from the right anterior superior iliac spine to the umbilicus. This localized dull ache remained *in statu quo*, but was associated with intermittent tenesmus. The bowels had been open that day, and the appetite had been normal. There were no urinary symptoms. The tongue was clean and moist and the breath normal, and the patient, when seen at 11.45 p.m., half an hour after the onset, apart from the persistent dull ache, looked and felt perfectly well. At this stage a leading question as to the presence of shoulder pain was answered in the negative.

On examination the temperature was found to be 37.1° C. (98.7° F.) and the pulse rate was 88 per minute. The beat was of good volume. The heart and lungs, and also the breasts, were clinically normal. On examination of the abdomen it was noticed that movement was unrestricted, but on palpation, tenderness and hyperæsthesia were elicited at the area in the right lower quadrant of the abdomen, about 3.8 centimetres (one and a half inches) above and medial to McBurney's point, at the lateral border of the right rectus muscle. There was no rigidity, but the muscles were "on guard". Elsewhere there was no tenderness beneath the examining fingers; but palpation produced pain at this spot on the right side. No masses or viscera were palpable, and no dulness to percussion was present in the flanks.

Rectal examination gave the following information. The left vaginal fornix was empty and not tender. Movement of the cervix produced pain localized in the abdomen to the same right-sided area mentioned before. There was tenderness to the right of the cervix, but no mass could be felt. It was also noticed, however, that in the biddigital examination of the right vaginal fornix the fingers on the abdomen elicited much more tenderness than did the upward pressure *per rectum*. The uterus seemed normal.

The patient was sent into hospital, much to her surprise, as, to use her own expression, "she felt such a fraud". She was seen again one hour later, when it was found that her temperature had risen from 37.1° to 37.6° C. (98.7° to 99.6° F.), and the pulse rate from 88 to 100 per minute. A provisional diagnosis of either acute appendicitis or a right ovarian catastrophe was made, and it was decided to operate through a right paramedian incision.

At 3 a.m., on going in to see the patient pending theatre preparations *et cetera*, one was surprised to notice her now very pallid appearance and cold clammy skin; she said that she felt not so well, "almost as if she were going to die". In a few minutes, however, even as one stood by the bedside, she seemed to pick up again.

At 4.15 a.m., as she was being placed on the operating table, she complained, for the first time, that the lower abdominal pain had now spread upwards and medially to the epigastrium, but that the maximum pain was still at the site of onset, namely, medial and superior to McBurney's point, at the lateral border of the right rectus muscle. She also complained of a pain "like a stitch", aggravated by breathing, over the anterior part of the right shoulder, but not over the actual tip.

Operation was undertaken about five hours after the onset of the pain. General anaesthesia with ethyl chloride and ether given by the open method was used. A right paramedian incision was made through the abdominal wall, which was well developed. On opening the peritoneum one encountered free bright red blood and removed large, soft, bright red, stringy clots from the pelvis behind and also to the left of the uterus. The right adnexæ were first examined and found to be normal, as was also the left Fallopian tube. But on inspection of the left ovary bright red blood was found oozing freely from a rent in a Graafian follicle, about 0.3 centimetre (one-eighth of an inch) in length, which before dehiscence might have been about 1.9 centimetres (three-quarters of an inch) in diameter. The follicle, whose collapsed, very friable walls were lined with dark blood clot, was partially excised, and the raw surfaces were oversewn. This checked the bleeding.

Altogether, from half to three-quarters of a pint of blood must have oozed away from the lacerated cyst wall. The appendix, apart from slight infection, was not diseased and was allowed to remain *in situ*. At the conclusion of the operation the patient's general condition was satisfactory; the pulse rate was 120 per minute and the pulse was of good volume. Glucose-saline solution (10%) was given *per rectum* in a dose of 568 cubic centimetres (one pint), which was repeated in four hours. General anti-shock measures were instituted, with the free exhibition of morphine. The pulse rate was taken hourly. Four hours later the pulse rate was down to 88 per minute. Convalescence was uneventful.

Discussion.

The points in this case worthy of note are the following: (i) the severe pain, which lasted only about ten minutes; (ii) the regular sequence of symptoms, very instructive when viewed in retrospect; (iii) the paucity of findings on rectal (vaginal) examination, and their rather misleading character; (iv) the presence of tenesmus, presumably from the accumulation of blood and clot in the pouch of Douglas; (v) the predominantly right-sided symptoms associated with a left-sided pelvic lesion; (vi) the slight pyrexia that developed; (vii) the spread of pain from the point of origin in the right lower abdominal quadrant, at first medially and after a few hours upwards to the epigastrium, which medial and upward spread is said to be rather typical of the condition, in contrast with the spread of pain in appendicitis; (viii) the absence of anomalies of menstruation and of blood-stained discharge, such as that associated with ectopic gestation; (ix) the possibility of recurrence, which is rare but has been reported; (x) the accuracy of the post-operative diagnosis, which is debatable.

As regards this last point, in the absence of microscopic sections I can only say, from the macroscopic findings and from the time of onset (namely, the nineteenth day of a twenty-eight-day menstrual cycle), that it was probably a Graafian follicle and not a *corpus luteum* cyst that burst, although rupture of the latter is stated to be the more frequent of the two.

SPONTANEOUS HEALING OF AN INJURED SPLEEN, DISCOVERED AT AUTOPSY.

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Clinical Record.

MIRA (MELA), indentured labourer, a native of Erap in the Morobe district of New Guinea, aged about twenty-six years, was admitted to the Bulolo Gold Dredging Native Hospital on December 24, 1938. The only history available was that he had been sick and constipated, with abdominal pains, for two days. On admission to hospital he complained of severe generalized abdominal pain. His abdomen was distended and "doughy", and there was some tenderness, mainly epigastric. There was no rigidity and no mass was palpable. Rectal examination revealed impacted faeces in the rectum. His tongue was coated and dry. His temperature was 37.6° C. (99.6° F.) and his pulse rate 110 per minute.

A high enema produced a delayed result of a considerable quantity of hard faeces, with diminution of all his symptoms; but by the morning of December 26, 1938, the pain was much worse and his general condition was very low. There was still no abdominal rigidity, and a second enema was retained. He collapsed and died at 11 p.m. on December 26, 1938.

Post Mortem Examination.

The salient points revealed at autopsy were the following. There was about one ounce of free fluid in the pelvis. The omentum was bound down in old, thick, tough adhesions to both sides of the pelvis, to the left flank and in the region of the splenic flexure of the colon. The colon was sharply kinked, held by adhesions, at the splenic flexure. Below the kink it was of normal appearance, slightly narrowed, and bound down by adhesions. Above, it was much distended, containing fecal fluid.

The spleen was almost twice the normal size, very firm, and somewhat friable. Its *facies diaphragmatica* was strongly adherent to the parietal abdominal wall. When it was removed a shallow concave scar, half an inch wide and running almost its whole length, was found. The edges of the scar were adherent to the parietal peritoneum. At the lower end of the scar was an irregular open cavity, about 3.1 centimetres (one and a quarter inches) in length and 2.5 centimetres (one inch) in width, and about 2.5 centimetres (one inch) deep, down the sides of which the peritoneum had partly grown (see Figure 1). Transverse section through the scar revealed that it extended only through the thickness of the capsule and apparently did not involve the body of the organ.



FIGURE 1.

On the skin of the left flank, above the iliac crest, was an old healed scar, about 5.0 centimetres (two inches) in length and 3.8 centimetres (one and a half inches) in width, and there was a corresponding scar on the inner surface of the abdominal wall. No suture marks were visible. The upper part of the anterior surface of the left kidney was also scarred by adhesions.

Discussion.

No history of previous injury could be obtained. Obviously, however, at some time the patient had suffered a penetrating wound of the left flank, which had punctured the lower pole of his spleen and split the capsule along almost its whole length. At the time his spleen was much larger, judging by the extent of the corresponding scarring on the adjoining peritoneum. Whether only hemorrhage resulted or whether peritonitis also occurred is uncertain; the latter is more likely, judging by the presence of what appears to be an old abscess cavity in the spleen.

The spleen is now in the possession of the School of Public Health and Tropical Medicine of the University of Sydney.

Acknowledgement.

I am indebted to my senior assistant, Mr. A. T. Simmons, who handled the case and who did all the spade-work of preparing notes *et cetera*.

Reviews.

PUBLIC HEALTH AND HYGIENE.

PROFESSOR CURRIE, who has had teaching experience in Canada, as well as at Glasgow, presents a text-book intended for the use of students of medicine and also as an aid to the general practitioner.¹ A logical arrangement is followed. The life history of the human being in relation to social services is described, from maternity and child welfare to industrial hygiene. General hygiene, food, ventilation, lighting, water, housing *et cetera* are taken next, and finally infections and infestations, with a concluding chapter on international hygiene, are considered. Naturally the author adheres to British practice and organization and to the needs of cold climate and a highly organized and industrialized population.

The treatment is comprehensive and up to date. Enlightenment is given on such things as autosomes, the Porteus test, asbestosis, sericite, standardized death rates, mean values, designated milks, captive bolt pistol, hole and cap cans, eupatheoscope, effective temperature, hypocaust, zeolites, decibels, Moloney test, Grancher system, anti-mary stations, lewisite—subjects which might form an interesting and severe test for many of the medical profession.

With due allowance for special Australian needs and experience the book is an admirable manual of public health, lucid in style, sound in criticism and full of practical common sense. It is not easy in the condensed dogmatic style, which is essential owing to the obvious restrictions of space, to present a case which will appeal to the student on the one hand and the public health expert on the other; yet Dr. Currie has succeeded, and any practising practitioner would be benefited by the wider viewpoint.

In these days, where the bounds of curative and preventive medicine are steadily disappearing and medical practice is more and more linked perforce with social organization, the practising doctor needs such a guide to explain both the administrative machinery in the background and his own particular duties in the campaign against disease.

CLINICAL PATHOLOGY.

THERE are many books on laboratory methods in medicine, some large, others small. Kracke's book² is intermediate in size, but complete enough for most people who use or consult such books. It is divided into sections, each by different authors, and each of these is a professor in some university in the United States of America, mostly in the southern States. Technical methods are given, but also there is something on the interpretation of results. Hematology receives many chapters (245 pages), and the information is up to date. There are chapters also on biological chemistry, the cerebro-spinal fluid, faeces, exudates and serological methods. There is also a final chapter on laboratory methods in general practice. The printing and illustrations are excellent.

This book obviously has the important advantage of being written by a number of experienced laboratory workers and teachers, each selected for some special sections. No one man can now cover the field. This is quite a good book of its kind and can be recommended.

¹ "Manual of Public Health. Hygiene", by J. R. Currie, M.A., M.D., D.P.H., F.R.C.P.; 1938. Edinburgh: E. and S. Livingstone. Demy 8vo, pp. 337, with illustrations. Price: 15s. net.

² "A Textbook of Clinical Pathology", edited by R. R. Kracke, with the assistance of the following contributors: A. P. Briggs, L. W. Diggs, G. Hermann, F. M. Johns, F. B. Johnson, R. McBurney, H. E. Meloney, A. J. Miller, F. P. Parker, V. P. Sydenstricker, J. G. Wahlbin; 1938. London: Baillière, Tindall and Cox. Medium 8vo, pp. 552, with illustrations. Price: 27s. net.

The Medical Journal of Australia

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All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

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PHYSICAL FITNESS.

In his opening address at a meeting of the National Health and Medical Research Council, held at Canberra last November, Senator H. S. Foll, Minister for Health and Repatriation, said that national fitness today must walk hand in hand with national defence. He did not make this remark, however, until he had laid emphasis on the importance of infant welfare in the attainment of efficiency of the whole nation. Had the Minister's remarks been more than an introduction to the deliberations of the Council, he would doubtless have said much more on infant welfare and other matters connected with physical fitness. The average person may not see at once how appropriate it is that physical fitness should be discussed by a council having research as its object. In our previous references to physical fitness we have insisted that the causes of unfitness must be found, and that since no training can overcome the ill effects on children of defects in growth processes manifest before the school leaving age, it is important that we should, as a nation, deal with developmental and environmental factors which lead to unfitness. The pronouncement of the

National Health and Medical Research Council on the subject of physical fitness has been published *in extenso* in this journal as part of the report of a meeting of the Federal Council of the British Medical Association in Australia in the issue of February 4, 1939, at page 204. Since the last meeting of the National Health and Medical Research Council the Federal Government has appointed a National Coordinating Council for Physical Fitness. Senator Foll is chairman of this council, and its members comprise representatives from the Commonwealth Department of Health, other health departments, and various official and lay bodies. After two days' session the council adopted the following resolutions as setting out its objectives:

(a) To act as a coordinating agency to ensure the improvement of the state of individual physical fitness throughout Australia, on a national basis.

(b) To cooperate with State Governments, State departments, local authorities and any State council for physical fitness for the following purposes:

(i) To develop community and individual appreciation of the need for and the benefits of physical well-being and to develop a sense of community and racial responsibility in that regard.

(ii) To provide opportunity and essential facilities for every individual to develop a sound knowledge of the principles of physical education.

(iii) To coordinate the efforts of organizations which are now or may be later working for allied purposes and to assist and supplement their efforts where desirable and possible.

(iv) To adapt physical education to the necessities of each stage of life—as, for example, the infant, the child, the youth, the adult—and to make relevant information readily accessible to the public.

(v) To give full regard to: (a) the part played in the building of the body by the adequate care and feeding of the expectant and nursing mother; and (b) the high importance of right nutrition at all stages of growth and development.

(vi) To provide for positive, preventive, remedial and corrective training.

(vii) To provide for adequate education of teachers and leaders in the principles and practice of physical education, and to record in a national register the names and qualifications of such adequately trained persons.

(viii) To foster, in association with the National Health and Medical Research Council, inquiries into the factors associated with any degree of general or specific unfitness and in relation thereto to recommend and assist in measures of correction.

At its last meeting the Federal Council appealed to the several Branches of the British Medical Associa-

tion in Australia to give active support and cooperation to this movement.

Australian interest in physical training is part of what is almost a world-wide movement. Some countries in Europe have become highly organized physical training centres; many have combined through the Health Organization of the League of Nations to formulate a scientific basis of rational physical education which can be adapted to different ages. The International Commission formed by the Health Organization has published a report in the *Bulletin of the Health Organization* of August, 1938. The general recommendations of this commission are as follows:

1. The term "physical education" must be understood to include all forms of physical exercises.
2. Physical education should be developed in such a manner as to make it interesting for the individual.
3. The subject of physical education cannot be developed independently, but must be considered in association with nutrition.
4. The aim of physical education should not be to develop "champions", but to benefit the whole community.
5. Routine physical exercises should be taken in moderation, so as to bring about a sense of well-being.
6. It is desirable that physical education should be undertaken under medical supervision.
7. No one should engage in strenuous training and competitive exercises without a medical examination. The precaution is particularly important for adolescents and for individuals over thirty years of age.
8. Strenuous exercise should be avoided during menstruation.
9. It is inadvisable to allow strenuous competitions between subjects of widely different categories (especially children and adults).
10. It is suggested that physical exercises should be spread over the week and not concentrated on one day.
11. It is suggested that severe exercise should be avoided shortly before and two hours after meals.
12. The evidence available shows that one of the best periods for physical exercise (physical education lessons) is in the middle of the morning and two or three hours after the midday meal.
13. It is desirable that corrective exercises should be developed.

The Commission also recommended that laboratory research should be carried out. For this research three headings were suggested. Physiological research, it was thought, should seek to determine: (a) the effects of physical exercise on the physiological functions of the body; (b) the specific effects of different types of exercise upon physiological functions at different ages. Anthropometrical investigations should include the study of the

characteristics of athletic types with regard to different countries. Psychological investigations should inquire into the relationship of intellectual development and physical development. In the report of the Medical Research Council of Great Britain for 1937-1938 it is pointed out that in view of the beneficial effects of exercise it is surprising how little is known of the physiological basis either of the processes underlying the feeling of well-being or of the mechanism of improved physique and health. "Even less study has been given to the optimum nature and amount of exercise for individuals differing in physique and mental outlook. Training in various exercises and sports is still largely based on empiricism, and the undoubtedly deleterious effects which may result from too arduous and otherwise unsuitable forms of physical activity for some individuals require careful analysis." The report goes on to state that physical exercise "is closely related to nutrition, not only in a quantitative sense as regards supply and usage of energy, but, in a more subtle way, in relation to the condition of the body which has resulted from the kind of food eaten, especially in the earlier years of life". The Medical Research Council has appointed a Physical Exercise Research Committee to inquire into problems associated with physical exercise.

From the foregoing it will be clear that the promotion of physical fitness in a community is not simple. In this connexion we would commend to readers the report by Dr. E. Sydney Morris, Director-General of Public Health of New South Wales, published elsewhere in this issue. This is the report made by Dr. Morris to the National Health and Medical Research Council. Organization is necessary and this is being undertaken in Australia. The interest and imagination of the people must be awakened; their enthusiasm will follow. But beyond this it is not a question of a slogan such as "Take more exercise" or "Join such-and-such an enterprise". Were all the members of the community normal, well-fed, healthy persons, advice of this kind would probably be fruitful but would never wholly suffice. This Utopia, however, is not yet. Even under such Utopian conditions special provision would have to be made for persons of dif-

ferent age periods. Under present conditions of society, while every endeavour is made to put into practice the widest principles of preventive medicine, physical training must be applied with wisdom and discrimination to both the normal and subnormal in the community. At the same time, by careful and patient research we must try to replace empiricism by exact knowledge of facts and of the proper manner of their application.

Current Comment.

SPONTANEOUS PNEUMOTHORAX.

SOMEWHERE in the past it became the common belief that in the great majority of cases spontaneous pneumothorax was due to pulmonary tuberculosis. This curious mistake has been repeated persistently in medical writings. In the light of modern knowledge the striking figures quoted by some authors are unbelievable. Most of these figures were compiled before the development of radiography to the point where it was proved to be essential in the diagnosis of pulmonary diseases. Errors of diagnosis must have been frequent. However, the figures were accepted, and it is only within recent years that they have been seriously disputed. An investigation conducted by Kenneth M. A. Perry provides convincing evidence that spontaneous pneumothorax is comparatively rarely associated with pulmonary tuberculosis.¹ Perry discusses the various theories of the cause of the condition, namely: (i) ulceration of the visceral pleura by a subpleural tubercle; (ii) rupture of an air vesicle on the surface of the lung, as in emphysema (local or generalized) or a congenital cystic condition; (iii) rupture of the visceral pleura as a result of sudden effort or awkward posture. An argument against the first cause is that "rupture of a caseous focus into the pleural cavity invariably infects it, causing either a hydro- or a pyo-pneumothorax with fever". Further, the later examination of persons who have suffered spontaneous pneumothorax often fails to reveal evidence of tuberculosis. From 1924 to 1937, 85 patients who were previously apparently healthy were admitted to the London Hospital suffering from spontaneous pneumothorax. Perry was able to trace 55 of these and to examine them by X rays; twelve more were found to be alive and well; four more had been examined six months to five years after their admission to hospital and found to be well; four had died (one in hospital); ten could not be traced. The remarkable feature is that not one of these patients apparently had pulmonary tuberculosis. Perry suggests the name "benign spontaneous pneumothorax" for this condition. In contrast with the history of these 85 patients is the history of 16 patients admitted to hospital during the same period suffering from

pulmonary tuberculosis and pneumothorax. Each case was complicated by the presence of fluid or pus in the pleural cavity and by fever; in 50% of cases death occurred within one month. In 13 other cases observed during the same period at the London Hospital the pneumothorax was symptomatic of some gross lesion: trauma in seven, lung abscess in three, empyema in one, carcinoma of the oesophagus in one, and malignant neoplasm of the heart in one.

Perry does not think that generalized emphysema is a frequent cause of spontaneous pneumothorax. He points out that the majority of patients with spontaneous pneumothorax are less than forty years of age; that is, a time of life when generalized emphysema is uncommon; further, when the pneumothorax has disappeared, no evidence of emphysema can be found. In young people generalized emphysema occurs only as a complication of asthma; yet in a search of the literature he was able to find the records of only five cases of pneumothorax and asthma. As an additional argument he points out that the majority of patients with benign spontaneous pneumothorax suffer from no great anoxæmia; whereas "a patient who already has his alveolar surface greatly reduced by generalized emphysema is likely to be rendered gravely ill with severe anoxæmia if this surface is further reduced by a super-added spontaneous pneumothorax". For the same reason generalized emphysema complicated by pneumothorax should have a high mortality rate; but Perry was able to find the records of only twelve autopsies in such cases.

Perry believes that in most instances benign spontaneous pneumothorax is caused by "rupture of a subpleural air vesicle either of emphysematous, scar tissue or congenital origin". He points out that a number of cases of pneumothorax in infancy have been recorded and that large emphysematous bullæ have been demonstrated radiographically and *post mortem*. Rupture of adhesions is a rare cause of pneumothorax. It must always cause hæmo-pneumothorax; in fact, in two of the few recorded cases the hæmorrhage was sufficient to cause death. Effort does not play the principal part in producing a spontaneous pneumothorax, but "it is possible that it plays a contributory part in precipitating a phenomenon which has been facilitated by long-standing alterations in the pleura".

The cyst-like emphysematous bullæ discussed by Perry may or may not be congenital. It has been suggested that the bulla communicates with a bronchus by an opening guarded by a valve, which allows air to pass from the bronchus into the bulla, but not back again; the result being that the bulla becomes more and more swollen. The point to be borne in mind here is that air can pass from the bronchus to the bulla only when the pressure is higher in the bronchus. Such a condition is conceivable when the bulla is situated at a comparatively unprotected spot, such as the apex of the lung (apparently the usual or only situation), and more or less violent expiratory efforts are made while the glottis is closed. A similar problem in

¹ *The Quarterly Journal of Medicine*, January, 1939.

dynamics presents itself in the pneumothorax with a valvular opening in the visceral pleura. In such a condition a "high-pressure" pneumothorax is said to occur. This must be distinguished from the type of pneumothorax in which there is a free communication between the bronchus and the pleural cavity, in which the pressure in the bronchus is the same as in the pleural cavity. In a "high-pressure" pneumothorax more and more air escapes from the lung and is retained in the pneumothoracic cavity. It is difficult to believe that in such circumstances air could quietly flow from the lung against such a high pressure; and it cannot be sucked out, for this would presuppose a lower pressure in the pneumothoracic cavity than in the lung. Presumably, then, air is forced from the lung by coughing or sneezing. The problem is by no means simple. A knowledge of physical laws will help in our understanding of it; but the activities of living tissues make the application of these laws very difficult. Whatever is the physical basis for the production of spontaneous pneumothorax, one thing is certain: it is not, excepting in rare cases, rupture of the pleura at a point weakened by tuberculous ulceration; in fact it can be truly said that tuberculosis is a comparatively rare cause (direct or indirect) of spontaneous pneumothorax.

THE TECHNIQUE OF PERCUSSION.

It is now rather a novelty to read a contribution to literature dealing with the time-honoured methods of physical examination. It is so universally recognized that radiological examination of the chest has become an absolute necessity in the diagnosis of pulmonary disease that the older methods are often unfairly despised. It is probably unnecessary to draw attention to the numerous signs which are of great diagnostic value, such as the sense of resistance felt in the intercostal spaces with consolidation, and still more markedly with pleural effusion, the tenderness, the restriction of movement, and the sounds of friction in the various stages of pleurisy, the persistent râles in the œdematous or inflamed lung and so forth. But it is when we come to percussion that difficulties arise. Warren Coleman comments on the usually accepted statement that the percussion note over the apex of the normal right lung is of higher pitch than that over the apex of the left lung.¹ He found that he was unable to demonstrate this to students, and thereupon he obtained the help of 223 normal medical students who were being instructed in physical methods of diagnosis, and, using them as subjects of study, he reports that the higher pitch was found over the left apex in 70% and the right apex in 30%. This reversal of the usual teaching he ascribes to the position of the eparterial bronchus and the proximity of the trachea to the apical portion of the right lung. It would perhaps be difficult to define just what "higher" or "lower" pitch conveys to the mind of the average clinical examiners.

¹ *The American Journal of the Medical Sciences*, February, 1939.

Coleman might even with justice cast doubt upon these terms too, for which the expressions "less resonant" or "more resonant" might well be substituted, since the sounds elicited by percussion of the chest are not true musical sounds at all, but very complex admixtures of mixed tones almost belonging to the order of noises. However, Coleman in a further communication on the art of percussion points out something which is of real value, that is, the important role in percussion played by the vibration sense. Many authors and observers have remarked that the sound produced in percussion is only one of the elements entering into the assessment of its results. One writer several years ago described the naïve surprise that he felt when he noticed that his findings by percussion were even more reliable when he omitted to remove his stethoscope from his ears. There is no doubt that when he performs the act of percussion the experienced physician receives a threefold impression, made up of auditory, tactile and vibratory sensations. Coleman dilates interestingly on this last element; it is, as has been often pointed out, a special form of sensation, a function of deep sensibility, and in this instance may even enable the patient whose body is being percussed to distinguish zones of varying resonance. He quotes Laura Bridgman, who asserted that she "heard" with her feet, and Helen Keller, who aptly described the "tactual sensations that do not belong to skin touch" and who declared "every atom of my body is a vibrascope". The testimony of these two famous women, who conquered not only the "total eclipse" of Samson but the added handicap of deafness, may be confirmed by the observation in their own schools of deaf children, who readily pick up the vibrations caused by acts of their teacher which they do not even see. Coleman suggests that vibration sense is of extremely primitive origin and that, being akin to the sensitivity of protozoa and of the lowlier animal forms to vibration, it is probably retained as a function to some degree by all living cells of the body. He would therefore regard it as independent of the senses of touch, pressure, pain, temperature and deep sensibility. These considerations may be regarded only as part of a physiological argument; what is much more important is the realization that we can acquire by practice the power to make percussion a valuable diagnostic method even apart from touch or hearing.

MODE OF ACTION OF DRUGS OF THE SULPHONAMIDE GROUP.

THREE main theories have been advanced so far to explain the benefits of drugs of the sulphonamide group. These are: (a) that the drugs have a stimulating action on the specific and non-specific body defences; (b) that the drugs act on the bacteria themselves, either as germicides or in some more subtle fashion; (c) that the drugs neutralize toxic bacterial products. James McIntosh and Lionel Whitby have recently taken advantage of the par-

ticular efficacy of 2(p-aminobenzenesulphonamide) pyridine (propriatorially called "M and B 693") against the pneumococcus to investigate the reliability of these theories.¹ In this direction it is possible to apply the extensive data upon experimental pneumococcal immunity which has accumulated within recent years. The laboratory animal used was the mouse, and orthodox methods of immunization were compared with the immunity produced by "M and B 693".

These investigators were first able to show that the intensive feeding of rabbits with "M and B 693" produced no changes in the leucocyte count. The animals protected by the drug showed no leucopenia after inoculation with pneumococci; but if the drug failed to give protection the usual leucopenia was observed. Further, in mice protected by "M and B 693" no evidence of increased phagocytic activity by leucocytes or fixed endothelial cells was seen in the blood or in histological preparations of the splenic pulp. Mice whose spleens had been removed were as invulnerable as normal mice after treatment with the drug, but needed continuance of the sulphonamide for an extra day or two before complete protection was assured. The spleen must therefore play some part in antibacterial activity.

The efficiency of the protection afforded by killed vaccine was then compared with that of animals injected with living pneumococci and then saved by oral administration of "M and B 693". It was demonstrated conclusively that a comparable immunity to subsequent inoculation was produced by these two methods and that such immunity was not due to retention of "M and B 693" in the body. The immunity produced by the saving of infected mice with "M and B 693" is related to the size of the injected dose in a definitely quantitative manner. Despite the fact that "M and B 693" is efficacious against numerous types of pneumococci, the immunity produced as above is specific for type. Finally, mice immunized with killed cocci and given a course of the "M and B 693" are not thereby more effectively immunized. The experiments were extended to compare the speed of production of immunity. As judged by the rate of protection against daily inoculation of living pneumococci and by the rate of agglutinin production, it was not possible to demonstrate an acceleration of immunity due to "M and B 693".

The changes in the character of the capsule of the pneumococcus are a valuable and readily observed index of degeneration. Samples of the organism previously injected into the peritoneal cavity of mice, both treated and untreated, were withdrawn and examined at regular intervals. After two hours the capsule was observed to be enlarged and to possess a crenated edge. This appearance was noted in both treated and untreated animals. The rate of multiplication was progressively slower in the treated animal, however, and no cocci could be found after twenty-four hours. Multiplication for a time at least can occur even in the

treated animal. Organisms can also enter the blood stream from the peritoneal cavity and reproduce themselves there for a period of about seven hours. In animals which recover, the blood stream becomes clear in twenty-four hours. McIntosh and Whitby conclude that "M and B 693" given prophylactically or at the time of inoculation does not prevent blood stream invasion, whereas passive immunization with Felton's serum or active immunization by a previously cured infection does prevent invasion. Further experiment proved that a similar "lag" in action of the drug occurred *in vitro*. Increasing numbers of pneumococci were incubated at 37° C. in rabbits' serum containing "M and B 693". The drug was not instantly active. The bacteria multiplied during the first two hours as fast as in controls. A quantitative relationship between the effective concentration of the drug and the number of bacteria destroyed was detectable. No significant diminution in the quantity of the drug was observed, whether it had exerted its action or not. Successive subculture *in vitro* produced "rough" cultures, which showed a distinct resistance to destruction by "M and B 693".

The action of sulphonamide would therefore appear to be much more subtle than that of a simple germicide. As far as these experiments go, there appears to be no fixation of the drug by the tissues upon which it acts. The "lag" which occurs before defects occur suggests that some slow neutralization or combination process is in operation. McIntosh and Whitby think that some essential food substance or enzyme necessary for multiplication may be destroyed. Such an hypothesis would explain the quantitative relationship between the destroyer and the destroyed, and that the "lag" occurs when the number of organisms is very small and the concentration of the drug very great. There are specific differences between the effects on streptococci and pneumococci in the behaviour of the drug in peptone broth. McIntosh and Whitby conclude that the sulphanilamide drugs act by blocking the food supply to bacteria, certain of the series being more effective towards particular types of organisms, "M and B 693" being decidedly more effective than sulphanilamide towards the pneumococcus. It is more likely that bacterial enzyme than actual food material is neutralized, since so much of the latter is available in the host. "Rough" bacteria and viruses are perhaps more resistant by reason of their feeble enzyme activities.

This is a most important contribution to the problem surrounding the mode of action of drugs of the sulphanilamide class. If the bacterial chemist, given such assistance by the bacteriologist, can proceed to prove or disprove the resulting theory, we shall be in possession of most far-reaching information. The potentialities of such endeavour are so vast and epochal as to suggest a completely new era of antibacterial warfare. At least it is refreshing to have experimental evidence that the sulphanilamides do not appear to retard the mobilization of natural immunity responses.

¹ *The Lancet*, February 25, 1939.

Abstracts from Current Medical Literature.

DERMATOLOGY.

The Value of Gold Treatment in Lupus Erythematosus.

ROBERT SIMONS (*The British Journal of Dermatology and Syphilis*, November, 1938) reviews the results of gold therapy in *lupus erythematosus* over a period of twenty-five years and discusses the treatment of patients at the University of Leiden clinic. He tabulates the results of treatment obtained from the figures quoted by numerous workers. In the first table the preparation used was "Krysoigan", whilst in the second the results of the use of many different preparations are shown. The author found some opponents of the use of gold on the grounds of its toxicity and expense. He states that although relapse may occur after treatment, it is usually cured by a second course of gold, especially if another preparation be used. Briefly the treatment recommended is a course of "Lopion" (which the author considers to be the most suitable remedy), given every week by intravenous injection. The initial dose always consisted of 10 milligrammes, and doses were increased through 25 and 50 to 100 milligrammes. But some patients were given even up to 250 milligrammes at each dose. The total dosage varied according to the severity of the disease. Some figures for total dosage were 85 milligrammes, 3.0 grammes, and in one case 24.5 grammes. Of 47 patients, 24 were cured; but of these, 11 relapsed. Some relapses responded to a second course of "Lopion", of about one-half the total dosage of the first course, while others were only finally cured after several relapses and after other preparations were used. Of five other cases in which recurrence took place, one was not influenced by any treatment, three patients relapsed so slightly that no further treatment was given, and one patient died after an acute exacerbation. This fatality is described in detail. Eleven other patients, although not cured by the course of "Lopion", were greatly benefited. To all these other preparations ("Bismogenol", "Solganal") were given as subsidiary treatments, three further cures resulting. Six patients were unaffected by "Lopion" therapy. The author's experience showed that it was useless to continue treatment if no improvement resulted after a total dosage of five grammes of "Lopion" (that is, weekly injections of 100 milligrammes over a year). Six further patients proved completely refractory to all treatment. Toxic manifestations (purpura, loss of hair, profuse menorrhagia, rashes, resembling *pityriasis rosea* and *Nichen planus* et cetera) are described. In three cases these were so severe

that further treatment was stopped. Finally the author adds his results to those of another worker who used "Lopion", and shows that out of 108 patients with *lupus erythematosus* in whose treatment "Lopion" was used, 73 were cured and 16 improved, while the drug failed in 19 instances. "Krysoigan" is considered to be the drug next in efficiency.

Seborrhœic Dermatitis.

A RÉSUMÉ of the various eruptions classed under the heading of seborrhœic dermatitis and a final suggestion that the term "seborrhœic" as applied to these conditions be abolished is made by G. H. Percival (*The British Journal of Dermatology and Syphilis*, January, 1939). He groups the conditions classed as seborrhœic under three distinct heads: (i) *pityriasis capitis* and eczematoid lesions (terminology used by Darier) affecting hairy or potentially hairy regions—the well-known figurate form of "seborrhœic dermatitis"; (ii) flexural (usually exudative) dermatitis; (iii) pustular dermatitis affecting areas covered with strong hair. Each of these conditions is discussed at some length, and considerable stress is laid upon the essential differences between them as regards distribution, spread, characteristic eczema reaction for each group, bacteriology and pathology, and response to treatment. The author concentrates particularly upon flexural dermatitis. He points out that staphylococci and streptococci are constantly to be found in the lesions, but that experimental reproduction of the disease by inoculation is apparently impossible. A special idiosyncrasy or cutaneous irritability is postulated on account of several facts in the disease: the frequent acute onset, intolerance to very weak chemical applications, rapid recurrence after mild mechanical irritation, secondary toxic eruptions of the trunk in many instances, and in a few cases the sudden development of a chronic generalized dermatitis, all of which phenomena have their counterpart in sensitization dermatitis of chemical origin. A particular type of eczema reaction is stated to be found in the condition, in the form of pin-point holes in the epidermis and lack of well-formed vesicles, differing both from the vesicular lesions of chemical dermatitis and from the nummular patches of the non-flexural "infectious eczematoid dermatitis". A brief comparison is made with pustular dermatitis of hairy regions, and it is pointed out that both this and flexural dermatitis respond to treatment very differently from pityriasis and eczematoid dermatitis. Another type of papulo-squamous dermatitis of apparently toxic origin and perhaps related to Besnier's prurigo, but occurring in adult life, is briefly mentioned, with the suggestion that perhaps an internal septic or toxic focus may play a part in flexural "seborrhœic" dermatitis. Non-flexural

"infectious eczematoid dermatitis" is then compared with pustular dermatitis. The author concludes by suggesting that an infective origin should be assumed in all three conditions which he has discussed, and that they should be provisionally classified as: (i) infective pityriasis and infective eczematoid dermatitis, (ii) flexural infective dermatitis, and (iii) follicular infective dermatitis, to include pustular dermatitis and infectious eczematoid dermatitis.

Hidradenitis Suppurativa.

HENRY A. BRUNSTING (*Archives of Dermatology and Syphilology*, January, 1939) describes in some detail the pathology and clinical features of *hidradenitis suppurativa*, which affects the apocrine sweat glands. He points out that the disease fails to receive due recognition in most dermatological works. After tracing the various references to the condition in past medical literature, the author describes the distinguishing characteristics, morphological and physiological, between the eccrine and apocrine sweat glands, and sums up these differences in tabular form. The importance of the apocrine glands in their relation to the aetiology of hidradenitis lies in their distribution, in their relation to the hair follicles and in their appearance at or after puberty. The glands are found only in certain zones, normally in the axillary, mammary, inguinal, genital and perianal regions, and it is in these areas that the disease is manifest. The clinical appearance and symptoms in the early and late stages are described. Points stressed are: (i) the onset as a firm inflammatory nodule followed by other similar lesions, and (ii) the appearance of suppuration, which tends to burrow in the subcutis and gives rise to the formation of epithelial bridges and multiple sinuses, together with ulcers with undermined edges. Chronicity with remissions and relapses is the rule. An analysis of cases is made in which several important details are tabulated: age grouping, site, and the presence of other dermatoses, such as *acne indurata* and various types of pyoderma. The cause remains obscure, but several factors are discussed, such as deodorant lotions and depilatories, plucking and shaving of the hair, and secondary spread from a regional lymphadenitis. *Staphylococcus aureus* and *Streptococcus viridans* were the most common organisms found; but the hæmolytic streptococcus, of the microaerophilic type described by Meleney in lesions called by him "chronic undermining, burrowing ulcers of the skin", was also seen. The initial lesion in the lumen of the apocrine gland is confirmed histologically. The process spreads through the subcutaneous tissue to involve finally all sweat glands, eccrine and apocrine. As regards diagnosis in the early stages, the condition must be distinguished more particularly from furuncle or carbuncle and from

lymphadenitis, cellulitis and erysipelas. In the later stages the diagnosis is from the chronic granulomata, especially scrofuloderma, nodulo-ulcerative syphilis, actinomycosis and *lymphogranuloma venereum* or *granuloma inguinale*. The prognosis as regards spread and response to treatment must be guarded, since the disease is very apt to appear in any of the areas described after healing perhaps in the site of origin. Treatment is considered from the conservative viewpoint in the early stage, and the radical viewpoint in the advanced stage. The best early treatment is prompt incision and drainage and the use of filtered X rays. Locally a zinc peroxide paste (Meleney), ultra-violet irradiation and sulphur baths are recommended. Sulphanilamide is useful when *Streptococcus hemolyticus* is the offender. Non-specific injection therapy may be tried. Autogenous vaccine and toxoid were not found useful in the author's series. In advanced cases total excision and destruction of the glands, followed by plastic repair, are advised.

UROLOGY.

Indigo-Carmine Test in Renal Tuberculosis.

M. SECRÉTAN (*Journal d'Urologie*, September, 1938) has made a statistical study of many cases of renal tuberculosis and suspected renal tuberculosis, in which indigo-carmin has been used as a functional test in conjunction with cystoscopy. He comes to the conclusion that when tubercle bacilli are found in the bladder urine and when in one kidney deficiency in indigo secretion is found while the other is normal in this respect, the presence of tuberculosis can be affirmed in the former organ, even though ureteric catheterization is for some reason impossible. As for the kidney which presents a normal indigo excretion, there is a chance that it also, though to a lesser degree, is tuberculous, for statistics show that there is about one chance in three that it is healthy. The method of using indigo-carmin is that of chromo-cystoscopy or endoscopic inspection of the ureteric orifices, so that the frequency, character, strength and coloration of the urine effluxes are noted. It is a true physiological method, not vitiated by reflex inhibitory and other troubles set up by the passage of ureteric catheters. The author has abandoned the intramuscular injection of the dye on account of the variability in results following on variability in speed of absorption. The usual intravenous dose is four cubic centimetres of a 0.4% solution of the dye.

Progress in the Treatment of Prostatic Hypertrophy.

T. HRYNTSCHAK (*Urologia*, October, 1938) summarizes his present attitude towards the treatment of prostatic

hypertrophy as follows. The indications for hormone therapy are subjective disturbances in patients with little or no residual urine (less than 50 cubic centimetres). The generally prescribed dosage is as a rule too feeble. The author uses hormone for six to eight weeks, two to three times a week; he gives intramuscular doses of at least ten milligrammes of testosterone propionate in oil. The effect on the subjective disturbances is excellent, frequency of urination is diminished, dysuric troubles disappear and micturition becomes more free. However, the residual urine does not diminish, neither does the size of the hypertrophy. For suprapubic prostatectomy the operation of S. H. Harris, with immediate closure of the bladder, is recommended. The author found that this operation was indicated in 40% of his own cases. For perurethral resection the instrument favoured by the author is the resectoscope of McCarthy. The amount of tissue to be removed at one session depends on the volume of the hypertrophy, the intensity of the hæmorrhage and the ability of the operator. The technical difficulties are great, however, and the author refers to the frequent repairs which are necessary even in the best of such instruments. The author's attitude is that prostatectomy is the method of choice, but that special indications lead to resection in quite a considerable proportion of all cases.

Rupture of the Tuberculous Bladder.

T. E. WYATT AND H. L. DOUGLASS (*The Journal of Urology*, October, 1938) record a case of spontaneous rupture of a tuberculous bladder by the formation of a vesico-vaginal fistula. Thirty-one cases have been reported in which spontaneous rupture was due to tuberculosis. Death has invariably resulted, in spite of surgical intervention, whenever the rupture was intraperitoneal. In the authors' case the disease affected only one kidney, which was removed. The cystitis and fistula were treated by injections of a 2% solution of phenol. This not only relieved the acute symptoms of frequency of micturition and scalding, but caused the fistula to close without further operative treatment. Among the cases collected from the literature, in four operation for fistula had been performed. In all cases the operation was unsuccessful. The authors suggest that the only useful operative measures are nephrectomy, nephrostomy or ureteral transplantation.

Nephrogenous Acidosis in Prostatic Diseases.

H. RETLEV-ABRAHAMSEN AND V. AALKJER (*The British Journal of Urology*, September, 1938) have investigated those patients with diseases of the prostate gland who fail to recover sufficient renal function to warrant operation in spite of efficient drainage and increased fluid intake. These authors believe that the per-

sistence of "pseudo-uræmia" is due to acidosis and that rapid relief is afforded by sodium bicarbonate injections. The treatment consists in the intravenous administration of a 1.3% (isotonic) solution of sodium bicarbonate to patients with reduced plasma bicarbonate values. The remedy must be used in quantitative doses based on the analysis and on the patient's body weight. An excess will cause alkalosis with the danger of tetany. The calculation is made by the use of the Palmer and Van Slyke urogram. For safety divided doses are used. For example, if a patient should have three litres of the solution according to the urogram, one litre is given per day for three days, when a further plasma bicarbonate estimation is made. With this treatment it has been found that not only do the clinical signs disappear, but the blood urea values rapidly depreciate. In addition, its post-operative use has been found helpful when extra demands have been made on the renal tissue, as in hæmorrhage and renal infections.

Urea-Splitting Organisms or Urinary Calculi.

RICHARD CHUTE (*The New England Journal of Medicine*, December 29, 1938) reviews 101 cases of urinary lithiasis and emphasizes the importance of urea-splitting organisms in this disease. The bacteria concerned, in order of frequency, are *Bacillus proteus* (60%), non-hæmolytic streptococci and staphylococci, *Bacillus pyocyaneus*, *Bacillus influenzae* and *Micrococcus flavus*. Of the cases of recurrent calculus, in 80% infection by urea-splitters was present, while in 67% of these cases multiple or recurrent calculi were present. Thus multiple or recurrent calculi and such infections go hand in hand. These infections, especially those caused by *Bacillus proteus*, are difficult to cure and are rarely permanently eradicated. Chronicity diminishes the prospect of permanent cure. The use of ammonium chloride as an acidifier in these infections is strongly contraindicated. The most effective drug therapy has been with sulphanilamide; but even this cannot be successful until all calculi and all causes of urinary stasis are removed—a condition which is not always attainable.

Orchido-Epididymal Tuberculosis.

VINCENZO MAGRI (*Urologia*, October, 1938) reports the results of surgical treatment in seventeen cases of tuberculosis of the epididymis and testis. Fourteen of these patients have been observed afterwards for periods varying from two to six years. In twelve cases the operation performed was epididymectomy, sometimes with partial vasectomy, and in five cases epididymo-orchidectomy was found to be necessary. Complete cure was obtained in 82% of cases. No concomitant renal tuberculous lesion could be determined in any case of this series.

Public Health.

PHYSICAL EDUCATION: AN OUTLINE OF ITS AIMS, SCOPE, METHODS AND ORGANIZATION.¹

Introductory.

The ideal of physical fitness has a venerable history, and though it has never been entirely lost, recognition of its importance has been diminished at certain periods and again revived at other periods in response to national aspirations.

One of the most potent national urgings towards physical fitness has been the desire to provide a race of strong, virile, stalwart individuals who would prove an invincible bulwark for defence in times of crisis or emergency. It is from such soil that certain well-known systems of physical exercises have sprung, and it is perhaps not without significance that the renewed interest in and enthusiasm for physical education during recent years, coincide with difficult and troubled international relationships. Physical fitness, however, is primarily an individual responsibility, but since it is an essential qualification of socially efficient citizenship, it is obviously a matter of direct concern to the State.

The State, in consequence, must give a lead by providing adequate facilities and the necessary organization so that the individual will be encouraged to carry out his part for his own and, indirectly, the State's benefit.

The New South Wales Physical Education Advisory Committee summarizes the position as follows:

Physical well-being means harmonious development of the body in accordance with individual potentiality, based on sound heredity, and is essentially a condition of balance and orderly functioning without undue stress or strain.

Physical well-being is dependent on nutrition and exercise, recreation, hygienic activity and healthy living conditions.

To raise the standards of physical well-being of the community and maintain high standards it is necessary:

- (1) to develop community and individual appreciation of the need for the benefit of physical well-being and a sense of community and racial responsibility;
- (2) to provide facilities for every individual to attain to the sound knowledge and to the practice of healthy living;
- (3) to coordinate the efforts of organizations which are working for these purposes and to assist and supplement their efforts where necessary;
- (4) to adapt physical education to the necessities of each stage of life—the infant, the child, the youth and the adult;
- (5) to provide for positive, preventive, remedial and curative training; this training to be under the control of properly qualified persons;
- (6) to furnish teachers and leaders with a liberal education which enables them to grasp principles and their application.

Historical.

Grecian Culture.

The civilization of Greece is the classical instance in which physical education became established as an integral part of the general culture.

The Spartan system of physical education placed special emphasis on gymnastic training and by its means produced the famous Spartan hoplite immortalized since Thermopylae. It is worthy of note that the Spartans had

no gymnasia in the modern sense of that term, and all their training was carried on in open fields. In spite of its achievements the Spartan system of physical education had certain defects. It lacked symmetry and balance and tended to suppress individual liberty of life and thought.

The Athenian type of education, on the other hand, was much broader and ultimately dominated all other methods throughout Greece and her dependencies. It was a judicious blending of physical training with literary and artistic culture—a recognition of mental and spiritual potentialities in addition to physical attributes. All exercises were performed naked, Hellenic opinion considering it to be healthy to expose the body to the open air. A white skin was regarded as a sign of effeminacy. National games at Olympia were instituted nearly one thousand years before the Christian era. They were held every four years, and though competitive athletic activities were their main feature, the games possessed also a religious, artistic and literary significance.

In one respect the Greeks point an important moral to modern peoples. Contests were not indulged in by the few for the entertainment of the many as they are today. The aim was to be participators and "perspirators" rather than spectators. Success with the Greeks was not victory at all costs, but perfection in action as judged by form, grace, skill and control of temper.

By the beginning of the fifth century B.C. the Greeks had reached a very high degree of physical fitness and maintained their supremacy in this respect over all other surrounding nations for a long period of time.

Roman Civilization.

The Roman games are not comparable with the Greek athletic festivals. Whilst the Greek participated actively, he excluded the slave, whereas the Roman was a mere spectator of performers who were professionals recruited from the ranks of slaves and prisoners of war. The chief events were, in comparison with Grecian conditions, demoralizing exhibitions, such as wild beast fights and gladiatorial combats.

It can be readily understood that the reaction of the early Christians against the inhuman, and in some respects abominable, practices of a decadent pagan society was one of horror. In consequence they turned their attention wholly to moral education, and this tendency was perpetuated through succeeding generations until any interest in man's physical nature and requirements was regarded with antipathy if not abhorrence. It is not surprising, therefore, to find that physical exercise as a part of general education, or even as a desirable practice, disappeared for many centuries.

Denmark.

Early in the nineteenth century Franz Nachtigal commenced a movement in Denmark for the establishment of physical education. To Denmark belongs the honour of being the first modern country in Europe to introduce physical training into its schools (1809-1814) as an essential part of the curriculum, and to offer facilities for the systematic training of specialist teachers of the subject.

This system was eventually found to fall short of its objective, mainly because it was too static and lacking in interest whilst muscular effort was regarded as an end in itself. It was modified considerably by the gymnastic movement founded by Neils Bukh in 1915. Neils Bukh used planned exercises to secure good posture and to strengthen muscles for their necessary physiological actions. Rhythmic gymnastics were employed to teach balance and grace of movement, and these were supplemented by athletics, games and folk dances.

Germany and Sweden.

In Germany and Sweden the movements towards physical education received their impetus from military needs.

Friedrich Ludwig Jahn, urged by a patriotic desire to uplift the Prussian people after their defeat in the Napoleonic wars, instituted the beginnings of gymnastic exercises in most of the German States.

¹A report presented to the National Health and Medical Research Council, Fifth Session, held at Canberra, A.C.T., November 15 and 16, 1938.

In Sweden the impulse towards a national scheme of physical education was given by Per Henrik Ling, whose system of gymnastics is peculiarly his own. Ling, like Jahn, was an ardent patriot, and the inspiration of his movement was his intense desire to make his countrymen strong, virile, invincible defenders of their country against their enemy—at that time Russia.

Great Britain.

Whilst Continental countries were formulating their system of gymnastics, the British people maintained their interest in outdoor games and sports. Great Britain has been preeminently the home of games and sports, and in no country in the world have these pastimes won such an enthusiastic following among all classes of society.

Up to the close of the nineteenth century physical education in English—and Australian—schools was a minor feature of the curriculum, even if included at all. As a rule it was some form of uninteresting military drill, greatly disliked by the majority of children, and carried out in an atmosphere of compulsion under the supervision of an ex-non-commissioned officer. The English "Syllabus of Physical Exercises" issued in 1909 instituted a wholly new policy, which made physical education, for the first time, an important subject in the school curriculum, with a definite place in the time-table.

The Aim of Physical Education.

Primitive man, in his perpetual struggle for food and safety, depended very largely on his physical efficiency to overcome the numerous exigencies of his environment. His circumstances at least must have necessitated frequent and, at times, strenuous muscular effort; and unless his physique became adapted to such contingencies, it was inevitable that he would perish.

Under modern conditions of life physical activity is subordinated to intellectual functions, or in cases where physical effort is still required, the demands made upon the individual are likely to be excessive for his physique. It is essential, therefore, that equilibrium between mental and physical effort should, as far as possible, be established. The close relationship between mind and body implies that the efficient functioning of either is dependent upon that of the other. In consequence the aim of physical education should be to obtain and maintain the best possible development and functioning of the body as a means to aid the full fruition of mental capacity and of character.

Although certain brilliant intellects have risen superior to the impeding handicap of physical shortcomings, it is a recognized fact that a defective body generally hinders the attainment of the highest mental capacity inherent in an individual. It may also be accepted that the maintenance of the best possible functioning of the body must react as a beneficial mental stimulus.

It is a biological law that the regular use of muscles, joints and nervous structures is essential for their full development and continued efficiency, whilst disuse leads to atrophy and wasting. Physical exercises such as walking, running, jumping, throwing, climbing, and especially swimming, which involves the larger muscles of the body, improve the general circulation and help the respiratory, digestive, excretory and nervous systems to discharge their functions with greater efficiency. Provided activity is adapted to the individual's powers, his resistance to fatigue is increased and the exercise is not followed by excessive fatigue.

The fact that the individual should develop as a whole must be kept constantly in mind. Specialized development of one attribute or capacity cannot compensate for the neglect of others. A man may possess large muscles and in some respects possess great strength. This specialized development may, however, be ill-balanced and may cause him to be "muscle-bound", so that the very size of his muscles may interfere with their coordinate action. Such a condition often resulted from mechanical methods of muscle development.

It is obvious that if physical education is to produce the desired results, the individual must be taught to realize that the body, like the mind, can be directed by the will, and to take pride in the control of each.

The aims of physical education are summarized by Williams under four headings:

(a) Corrective.

The exercises in this group aim to secure good posture during school lessons and to correct bad posture of the child.

Posture may be adversely affected by faulty seating, clothing or footwear. Good posture, in the widest sense of the term, means a natural poise of the whole body at all times and under all conditions—standing, sitting, playing games *et cetera*. Hence it is obvious that correct posture is essential for the greatest efficiency and for sound health. It is one of the fundamental functions of physical education to produce and maintain good posture.

When postural defects are present, balance can be and often is accomplished by the development of a compensatory defect. Certain methods of physical culture, for example, may correct a dorsal kyphosis by the production of increased lordosis. The aim of efficient physical exercises is to eliminate the defect and not merely keep it in check by some form of muscular compensation.

It is obvious, therefore, that any corrective exercise must be prescribed following an examination of the individual child, and progress of the case must be noted so that any necessary modification of exercises may be brought about. It cannot be too strongly stressed that corrective exercises for a class as a whole are of little or no value.

(b) Educational.

In order to be educational an exercise must: (i) as a motor procedure make the individual more efficient, or (ii) as an aesthetic acquisition give pleasure to the individual himself or to others, or (iii) provide training in the social or moral qualities of good citizenship.

Such exercises would be embraced by: (i) games, sports, athletics; (ii) dancing—folk, characteristic and natural; (iii) exercises on apparatus; (iv) natural gymnastics; (v) club and camp crafts.

(c) Hygienic.

The exercises in this group are for the purpose of stimulating the systems of the body—the heart, lungs, liver, intestines *et cetera*. They seek to produce exercise in quantity and free perspiration.

(d) Recreative.

Recreational activities imply that the interest must be aroused and must be maintained by suitable variety. They must be adapted to individual requirements. They must have objectivity, that is, the individual, whilst temporarily forgetting himself from a subjective viewpoint, nevertheless expresses himself in action. Hygienic and recreational activities embrace similar exercises to those mentioned under the heading of educational. It is not possible to demarcate strictly these exercises into distinct groups. Emphasis, however, should be given to the different exercises according to individual choice or need and the environmental and other circumstances.

Classification of Physical Exercises.

Except on broad general lines it is not possible to classify physical exercises into categories which will permit them to be regarded as definitely and exclusively suitable for one sex or a particular age.

Most exercises are a mixture of different kinds of exertion, though it is usually possible to determine the predominant character of each exercise. With these reservations physical exercises may be divided into four classes: (a) exercises in strength, (b) exercises in speed, (c) exercises in staying power, (d) exercises in skill.

Exercises in strength call for maximum muscular effort and a heavy demand on the heart. A typical example is weight lifting. Their outstanding result is, in general, hypertrophy of muscles. Exercises in speed call for a very great effort in a very short time; for example, 100 yards and 440 yards races. In staying-power exercises the muscles are in action for a long period, though the work done in any given unit of time is not great. Walking, jumping and athletics generally may be cited as examples. Exercises in skill call for little physical effort, their aim being to bring about coordination of the muscle action, as in certain forms of gymnastics.

Physical Exercises in Relation to Age and Sex.

(a) Children.

The Infant.—The infant who comes under the supervision of a baby health centre is usually enabled to obtain a certain amount of physical exercise suitable to his limitations. Every mother is instructed to allot to her baby several short periods each day during which he is allowed to kick and use his limbs unhampered by any restricting clothing. This practice, now almost universal, is in marked contrast to that of previous generations, when babies were denied such healthy freedom owing to the custom of swaddling them.

The Toddler.—During the pre-school period the "toddler" is instinctively impelled to almost incessant movement and activity. Provided that the toddler obtains an adequate balanced diet, is early accustomed to fresh air and sunlight, given sufficient rest, and has contact with other children, it is almost certain that the normal games and interests of childhood will provide for his satisfactory development, especially if games are organized by kindergarten teachers in suitable playgrounds. Towards the end of this period, that is, about six years, swimming is an excellent form of exercise.

The School Child.—During school life some kinds of physical exercise form part of the curricula of primary and secondary schools in most countries. The time allowed for such exercises, however, is small and varies considerably in different countries. Sedentary school work occupies from 15 to 30 hours per week in elementary schools and from 10 to 36 hours per week in secondary schools. Intensive training with the view of making a great effort is definitely undesirable and harmful. The best form of exercise is provided by organized games. In school gymnastics, any kind of automatism, whether in instructions or in execution, must be avoided, because the psychology of the child requires the exercises to be made interesting by continual variation. Scouting has many advantages in inculcating discipline and in developing individuality. Camping helps to form character and encourages ingenuity in meeting difficulties. In this connexion long marches should be avoided, as they are very tiring, especially if individual equipment must be carried.

(b) Exercises during Puberty and Adolescence (Males).

It is not possible to discover any consensus of opinion among the various authorities regarding the type and degree of exercises suitable for the period of puberty and adolescence. Each country appears to have its own conception of what are the most suitable activities, so that organization and methods necessarily vary with geography. The one established point seems to be that serious competitive athletics are forbidden by most authorities to youths under 18 years, on the ground that intensive and lengthy effort at that age is contrary to physiological requirements. From that standpoint, cross-country running is open to serious question.

(c) Exercises for Adult Males.

The choice of the exercise or sport should depend upon the age of the individual. From 19 to 30 exercises in speed and dexterity produce the best results. From 30 to 40 speed gives place to endurance and strength, and exercise should conform to these characteristics. After 40 the amount of available energy decreases; nevertheless, exercises in staying power can be performed by many individuals, at a moderate rate, for a very long time. Walking and even climbing and rowing can be indulged in by many until quite a ripe age.

(d) Exercises for Girls and Women.

Physical education to serve girls and women should conform in principle to the same general plans as for males. There are, however, certain important points which should be borne in mind. These may be stated as follows (Williams):

- (1) Women should teach girls' classes and should coach girls' athletic teams. The practice in certain schools of selecting men to teach girls' gymnastic

classes or to coach their teams is bad. The man sets men's standards in performance; he fails to appreciate the girl's limitations in strength and her periodic disability.

- (2) The activities in the gymnasium, on the playground or athletic field, should be organized around the idea of girls' specific standards and accomplishments. The use of boys' and men's athletic events or men's gymnastic and calisthenic movements for girls and young women is unsuited in many cases. To determine activities that are acceptable for girls is the most important single work of the girl's director.

Wroczyński summarizes the findings of a large number of authorities in the following conclusions:

- (i) Girls should cease to take part in competitive athletics at the age of the first menstruation, that is, when their physiological development shows the impossibility of any further improvement in individual performance in tests of speed and dexterity, such as the 60-metre race, throwing a solid ball, and high jumping.

- (ii) It is useless to attempt to develop the female bone structure and muscular system by violent exercise so as to rival those of men. It has by no means been proved that the excessive development of the musculature in women facilitates childbirth. This does not mean that physical exercises are unnecessary for women, but they should be adapted to their strength, which is less great.

- (iii) The excessive development of the muscular system brings about a thickening of the bone structure, which prevents the development of the pelvis (this is narrower, resembling the masculine shape). Too violent exercise is inadvisable owing to the risk of injury to the abdominal wall, which in women is relatively weak.

- (iv) The menstrual period is a period of physical inferiority; the resistance of the organism to external agents and infection is lowered. Exercise at this time should be avoided.

- (v) Physiological facts point to the advisability of exercises in coordination for women, to enable them to gain the necessary control over their neuro-muscular system.

- (vi) The æsthetic sense is highly developed in women, and any exercise that appeals to that sense is good. Gymnastics should be taught to women by women, and the characteristic features of feminine movement—lightness and suppleness—should be preserved.

Organization.

The conception of the principles of physical education has broadened markedly in the last quarter of a century, and the pendulum has swung from the conception of man as an entity of so many muscles to that of a human being with a mind as well as a body. In determining the basis of our problem we cannot rely exclusively on anatomical or physiological considerations—though these are certainly fundamental—but must give weight also to social, moral, and even spiritual factors.

If we aim only at abstract health we shall achieve little, and unless our conception visualizes something more than breaking records, victorious teams, big muscles or profuse perspiration, we shall fall short of the ideal.

Physical education has great potentialities and may be so conducted as to set a standard of living that will surpass the average and the commonplace.

Technique alone, no matter how perfect, must not be the sole aim, and all our efforts should tend to assist the development of courage, strength and endurance, with imagination, satisfaction and *joie de vivre* as natural concomitants.

J. F. Williams, "The Organization and Administration of Physical Education", says:

The day has passed when any department could feel that it was meeting its problems by providing three ten-minute lessons a week in formal exercises. . . .

The health values of the programme are prominent in the foreground, and rightly so, but they are not sustained by the old fallacies of the Swedes and Germans, which at one time had the sanction that is historically given to the Medes and Persians. The health values are based upon a study of the whole nature of the child and not upon an anatomical dissection of its musculature alone.

Dutton and Snedden, "The Administration of Physical Education in the United States", say:

Physical education broadly includes all of the means which contribute to physical well-being, comprising nurture and favourable environment for growth, exercise and work, as well as corrective and curative activities. The attainment of the ends of physical education implies not only control of the ends of physical environment of the child, but the deliberate formation of habits, the imparting of knowledge of hygiene and the stimulation of the better ideals of physical efficiency.

It is obvious from these considerations that our organization must be planned to meet the varying requirements of several different age groups over a number of years, and yet be flexible enough to conform to the changes inevitable in a long-range progressive development.

The Director of Physical Education.

The central pivot of any national scheme of organization is the Director of Physical Education, on whom will depend, in large measure, success or failure.

His training and experience must be such as to enable him to formulate a comprehensive scheme of physical education embracing particularly pre-school, school and adolescent periods, and eventually providing for the recreative needs of adults. His administrative and organizing ability will have ample scope if areas like our Australian States are to be adequately covered and supervised. Above all, he must be capable of infecting his associates and assistants with enthusiasm, and be a perennial source of inspiration for all concerned.

School Teachers as Instructors.

It would seem that under Australian conditions there will be an immediate need for haste in training an adequate number of instructors.

In view of the numerous schools scattered widely throughout the States it will be necessary to rely, at any rate for some time, on the assistance of school teachers, if the programme of physical education is to be applied on a reasonably wide scale. It will therefore be necessary, at least as an interim measure, to give a number of teachers an intensive though abbreviated course of training, so that they will have a practical insight into the aims and objectives of the scheme. On this basis it will be possible to build a more extensive and specialized training until all those engaged in physical educational work become expert in this special field.

Academically Trained Supervisors and Instructors.

Those who specialize by an academic training in physical education will no doubt be utilized at first as supervisors of a number of schools, so that the work of the teachers will be coordinated and maintained at a satisfactory level of efficiency.

As the number of these graduates increases, their services will probably be utilized as expert instructors or leaders. The qualifications of a leader are admirably stated in the English Board of Education's syllabus, "Recreation and Physical Fitness for Youths and Men":

The Leader—Such are born rather than made. But the leader cannot be born with the necessary technical knowledge for this work, nor can he rely solely on the fact that he is a gamesman, is very fit and has some knowledge of gymnastic exercises through having received a good physical education in his younger days. His qualifications to play the part of a leader of men must also include patience and tact, sympathy

with the less gifted performers, common sense, a vitality that is infectious, and that magnetic personality that welds and holds his followers together. But he must be a versatile master of his work, and to become this he must devote time to being trained, and display thoroughness in the preparation of his schemes of exercise.

Accommodation.

We are fortunate, compared with many other countries, in possessing a climate which permits outdoor recreative activities throughout the greater part of the year. It is therefore not so essential in Australia to provide accommodation such as gymnasias, which are indispensable in those countries with a rigorous or uncongenial climate which effectively precludes sport and games out of doors for many months of the year. Gymnasias, however, are not to be ignored entirely. They are certainly desirable in secondary schools, and perhaps essential for adult classes the members of which can only undertake physical education at night-time.

Properly organized and utilized, the gymnasium can be an important auxiliary in any scheme of physical education. Success in effective use of a gymnasium depends chiefly upon the quality of leadership. Where the instruction is animated by the right spirit, a lively enthusiasm animates both teacher and class. In its absence one may obtain physical exercise in a narrow sense, but without mental content. Exercise under such circumstances will not produce the best results and will certainly have little effect unless associated with cheerfulness, good humour and goodwill. Sympathetic understanding and virile leadership are therefore fundamental characteristics of good physical training, and nowhere do they exert a more powerful influence than with classes of youths and men.

The gymnasium can be of great assistance in providing purposeful preparation for outdoor games, athletics and swimming. The technique of movements required in field games and other activities can be improved and perfected in the gymnasium, thereby giving many individuals, otherwise lacking in interest or skill, a fresh impetus to achievement.

Playing Fields.

The provision of properly laid-out playing fields is inadequate probably in most parts of Australia. If physical education is to be really effective, and if any comprehensive State-wide scheme is to be fruitful, it will be necessary to provide numerous playing fields for all centres of population.

It will need to be recognized by governments and civic authorities that playgrounds and playing fields are equally as essential as proper school buildings, and that, if mental education is necessary to bring the mind to fruition, physical education in its broadest sense is indispensable in bringing the body to its full development.

Viscount Dawson of Penn states the position thus:

Team games and sports which carry no conscious purpose of physical training, but are played for their own sake and the love of the game, excel in training the mind in alertness, concentration and decision, the body to quickness of response, and in arousing a sense of joyous struggle coupled with the discipline of playing for the side—altogether a harmony of body, mind and character . . . Sports and games are the fulfilment of physical training and should rest upon it, for planned exercises increase the strength, control and response of the body and improve the form and style of the athlete.

The provision of playing fields, though fundamentally important and essential, will fall in its objective unless suitably trained, responsible and sympathetic leaders or instructors are provided.

This statement applies with special emphasis to recreative physical training of youths and adults. Australia, in common with many other countries, suffers from the widespread complaint of "spectatorism", which

causes the waste of millions of leisure hours each week. Even children prefer the artificial gloom of the "movies" to the sunshine and the open air.

The playing field, to be effective, must be so organized as to be a definite counter-attraction to the cinema. It will not be from a sense of duty, but only because we can make recreative physical training more attractive than many forms of commercial entertainment, that the public will support the movement.

Swimming Facilities.

Swimming has strong claims for inclusion in any scheme of physical education. It not only has a universal appeal, but is one of the most beneficial forms of exercise. In coastal areas of Australia no difficulty will be encountered in utilizing the natural facilities offered by many excellent sea beaches and public baths. Australia may be justifiably proud of the excellent physique of the members of the various surf life-saving clubs. They have earned a well-merited recognition not only in Australia, but also in overseas countries, and are outstanding examples of the benefits derived from health-giving physical activity.

It is encouraging to note the increasing number of country towns which provide modern types of swimming pools, thus affording people of all ages not only the opportunity of learning to swim, but also to indulge in an excellent form of physical exercise.

Coordination of Physical Education with School Medical Inspection.

Physical education is primarily intended for the improvement of the physique and development of the normal individual, but by modification of its methods and the application of special exercises it can be of the greatest assistance in overcoming certain physical defects in children and young persons who fall short of the normal standard. In any national scheme of physical education it is therefore essential to ascertain at the outset how many individuals are physically suitable for normal instruction and how many are suffering from physical defects which will necessitate special corrective exercises. This implies a medico-physical survey at least of the school population; otherwise the extent of the problem will not be known.

At the present moment such a survey is being carried out by the Education Department in New South Wales, and it is anticipated that the data and information which will be obtained will indicate certain main requirements of a scheme of physical education in the schools. It will provide definite information regarding the extent to which the principal lines of the main scheme will need to be modified to meet the particular requirements of the different age periods, and especially of those children who are found to be suffering from postural defects and other faults in body mechanics.

If corrective exercises are to be effective it would appear to be desirable to provide that they should be carried out under medical supervision. The results of such corrective exercises will need to be carefully assessed, and in a certain number of cases such assessment will probably require the expert judgement of an orthopaedic surgeon. Specialist advice would certainly be desirable, if not essential, in bringing about necessary modifications of corrective treatment to meet the particular needs of a small number of individual cases.

Adequate medical supervision should be an integral part of any general scheme of physical education. Only by its means can the under-nourished or otherwise handicapped child be protected against unsuitable or excessive exercises and perhaps restored to normal health and development.

Propaganda.

Considerable effort will need to be made to enlighten the public in regard to the aims, scope and methods of physical education if a scheme of national dimensions is to achieve its objectives.

The average person confuses the term physical education with formal static exercises, marching and "drill". In the absence of publicity, the launching of a national scheme of physical education is likely to be interpreted as merely the introduction of a special system of training allied to "physical jerks" and calisthenics.

Coordination of all aspects of health education would be a great advantage, and it would appear to be very desirable that there should be close cooperation between health and education departments, medical and dental professions, and various other bodies which can speak with authority on some aspect of this question.

Coordination of Existing Agencies.

There are many organizations engaged in some aspect of physical education, but there appears to be little or no coordination between them.

One important step would be the establishment of some forms of advisory committees or councils in each State, on which the various organizations would be represented. Bodies representing amateur sport organizations, athletic associations (school and other), medical and dental professions, police, schools of physical culture, Young Men's Christian Association, Young Women's Christian Association, churches, life-saving clubs, kindergartens *et cetera* are some which come readily to mind. Many others could be co-opted in the light of experience so that a wide ramification would spread the aims and ideals of the movement throughout the community. It will be very necessary to enlist the support of local government authorities, whose cooperation in providing facilities for outdoor activities will be practically indispensable. It is here that a convinced public opinion is of the greatest value in supporting expenditure which otherwise may only be incurred with great reluctance. Another avenue capable of producing beneficial results is the encouragement of industrial undertakings to support the movement for physical fitness.

There is a growing tendency with many of the larger industrial firms to provide for the physical welfare of their employees. Some provide their own playing fields; others, in addition, have their own paid organizers, and generally encourage the utilization of the facilities afforded.

From this brief outline it will be seen that the scope for organization and coordination is very great, and it will require whole-hearted enthusiasm on the part of all concerned to achieve that end.

It is assumed that Australia will follow the line adopted by Great Britain and will endeavour to complete its organization by voluntary as opposed to compulsory methods. This is in accord with our national temperament, and although it may be slower and in some respects more exacting, it will be eventually more satisfactory and efficient for our purposes.

Training of Teachers and Instructors.

General Teachers.

As stated previously, it will probably be necessary in the initial stages of a national scheme to rely upon the class teachers to carry out the physical education programme.

It is understood that in most training colleges associated with education departments in Australia a certain amount of training in physical education is now given to trainees, but a more intensive and specialized course will be necessary in future if the teachers are to form part of the staff for more modern physical education. There is every probability that a certain minimum course will be compulsory for all teachers, and as the scheme develops the course will be gradually extended until the general teacher will be replaced by the expert instructor who is a university graduate specialist in physical education.

The guidance of a well-thought-out syllabus and expert supervision are desirable where teachers who are not expert physical educationists must carry out most of the teaching. It is also very desirable where teachers take up instruction in physical education as their principal activity, that they should not wholly sever their con-

nexion with general teaching. The retention even of only one educational subject makes them more flexible in the school organization and provides against future difficulty liable to arise from the fact that with advancing years some of such teachers become unfitted for physical activities.

Specialist Teachers of Physical Education.

The training given in different countries is in broad outline somewhat similar, but it varies considerably in regard to details and the emphasis given to certain aspects of the curriculum.

Great Britain.

Of the nine training colleges now existing, seven train women students and two train male students exclusively. Eight provide a three-years course; one of the colleges for women provides only a one-year course.

The three-years' course is designed for young men and women from the public and secondary schools who aim at becoming specialist teachers of physical education. No training is given in ordinary school subjects except hygiene. The curriculum includes anatomy, physiology, hygiene, educational gymnastics (theoretical and practical), massage and medical gymnastics, games and athletics, dancing, swimming, and the theory and practice of teaching.

The Physical Education Committee of the British Medical Association, after deploring the fact that in universities physical education was conspicuous by its absence, recommended that: (a) University authorities should direct their attention to this aspect of education, with a view to establishing an internal diploma and providing adequate opportunities for study. (b) In the university training departments for teachers a personal training in gymnastics should be obtainable during the three undergraduate years, as a preparation for the professional training in the subject which all students should receive in the fourth year.

With the advent of a nation-wide scheme of physical education in England and Wales, the British Government has now decided to establish a national school of physical education, which in future will probably be the main source of specialist teachers.

United States of America.

The training of teachers of physical education varies widely. Most of the schools require a high school certificate, although this is not uniform. There are two-year courses, which provide instruction in gymnastics, dancing and theory of physical education, anatomy and physiology. A three-year course provides the same essential courses and, in addition, instruction in hygiene and public health. Four-year courses provide, in addition to the subjects already mentioned, courses in English, history, science and modern languages.

The two and three-year courses qualify for a diploma. Four-year courses lead to an academic degree. The degree of B.P.E. (Bachelor of Physical Education) is given by the International Young Men's Christian Association College; and that of B.S.G. (Bachelor of Science and Gymnastics) by the Normal College of American Gymnastics. The latter college also gives a two-year course leading to the "title" of G.G. (Graduate in Gymnastics).

Melbourne University.

Melbourne University has the honour of being the first Australian university to establish a course of physical education. The course extends over two years subsequent to matriculation, and leads to a diploma or certificate. The aim is to instruct teachers of physical culture for schools. The course follows generally the lines of the English Board of Education's syllabus (1933) with certain modifications, and includes what are regarded as desirable features of Swedish, German, American and other methods. Field sports, team games, athletics, dancing and swimming (including life-saving methods) are included in the cur-

riculum. It is further proposed to make fencing compulsory for women students.

Teaching practice is carried out in cooperation with the Department of Education. Academic lectures embrace anatomy, physiology, body mechanics, first aid, diet and nutrition, hygiene, anthropology, anthropometry, "preventive and compensatory work" (corrective exercises), organization and administration of open-air activities (camping, hiking *et cetera*).

Medical Research.

It is a great surprise to anyone approaching physical education for the first time and from a medical angle, to find that very few principles based on anatomy and physiology have been established. One looks in vain, even in treatises on physiology, for any detailed or comprehensive statement regarding the physiological effects of physical effort in childhood and adolescence. It remains entirely a matter of opinion whether certain types of exercise are or are not prejudicial to children. There is little information on which one may form a definite judgement of the proper proportions of physical and mental effort, and any references to the symptoms of fatigue are rare and scattered.

It is inevitable, in the future, that the medical practitioner will have to play a more prominent part in determining basic facts relating to physical exercise. In Germany the new title of "sport specialist" has been introduced; it can only be claimed after fulfilling certain conditions, such as the taking of a special course in the technique of the physiological examination of athletes and participation in various athletic exercises *et cetera*. This title does not, of course, confer the right to practise medicine. In certain countries (Czechoslovakia, Poland, Yugoslavia, Austria and Italy) a number of practitioners specialize in this work; elsewhere the view is generally taken that the medical profession as a whole should receive training in the principles of physical education as part of the normal curriculum.

Until the medical profession makes its scientific contribution we shall not be able to define with precision the influence of physical training upon the general condition of the individual. Up to the present the chief obstacle in the way of exact investigation of the effects of training has been the lack of a reliable and generally accepted method of assessing physical efficiency. This is fundamentally a physiological and medical problem, which will require assessment by the medical expert. Medical research will be required to devise a standard method of testing tolerance to physical exercise, including a standard period of rest before the test is applied. A large and unexplored field of medical research is represented by the necessity to investigate the influence of physical education on the individual by readily available and reliable methods of body measurements.

Finally it will be necessary to discover some means whereby the general indices of mortality and morbidity can be utilized to measure the influence of physical training upon the collective public health of the general population.

It is obvious, if medical science is to render anything like adequate service, that the gap between the research laboratory and empirical methods must be bridged. It would appear that this will only be achieved by cooperation of the clinical practitioner, the physical training expert, the physiologist, the school teacher, and all others whose work is associated with this problem.

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Bibliography.

J. F. Williams: "The Organization and Administration of Physical Education".

C. Wroczynski: "Physique and Health", *Bulletin of the Health Organisation of the League of Nations*, Volume IV, Number 4.

British Medical Association Committee on Physical Education: *The British Medical Journal*, Supplement, April 13, 1936.

Board of Education (England) Syllabus: Recreation and Physical Fitness—Youths and Men.

Viscount Dawson of Penn: "Physical Education", *The British Medical Journal*, April 2, 1938.

Lord Horder: "Health with Happiness", *The British Medical Journal*, October 30, 1937.

C. H. Hembrow: "Physical Education", *THE MEDICAL JOURNAL OF AUSTRALIA*, May 8, 1937.

F. Dumas: "The Charles MacKay Lecture", *THE MEDICAL JOURNAL OF AUSTRALIA*, November 20, 1937.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Numbers 13 and 16, of March 16 and 30, 1939.

PERMANENT NAVAL FORCES OF THE COMMONWEALTH (SEA-GOING FORCES).

Surgeon Lieutenant (D) (on probation) Sydney Joseph Leon Abraham is confirmed in the rank of Surgeon Lieutenant (D), with seniority in rank of 7th February, 1938.

The appointment of Surgeon Captain William James Carr, C.B.E., as Honorary Physician to His Excellency the Governor-General, is renewed for the period 1st March, 1939, to 29th January, 1940, inclusive.

Emergency List.

The resignation of Henry Coverly Maling of his appointment as Surgeon Lieutenant is accepted, dated 8th February, 1939.

CITIZEN NAVAL FORCES OF THE COMMONWEALTH.

Royal Australian Naval Reserve.

Alan John Gray is appointed Surgeon Lieutenant, dated 1st March, 1939.

Royal Australian Naval Volunteer Reserve.

Arthur Wilmot Raymond is appointed Surgeon Lieutenant (on probation), dated 15th February, 1939.—(ex. Min. No. 73.)

AUSTRALIAN MILITARY FORCES AND SENIOR CADETS.

First Military District.

Australian Army Medical Corps.

Captain C. F. Marks is brought on the authorized establishment, 6th February, 1939; the provisional appointment of Captain N. H. Morgan is confirmed; Captain D. G. Croll is transferred to the Reserve of Officers (A.A.M.C.), 5th February, 1939.

To be Captain (provisionally)—John Allen McGree, 28th February, 1939.

Australian Army Medical Corps Reserve.

Norman William Martin and Charles Victor Watson Brown, 20th January, 1939, and 27th January, 1939, respectively.

Major E. F. Molle and Captain L. St. V. Welch are placed upon the Retired List with permission to retain their ranks and wear the prescribed uniform.

Second Military District.

Second Division: Staff.

Lieutenant-Colonel W. Vickers, D.S.O., V.D., Australian Army Medical Corps, from the command of the 8th Field Ambulance, is appointed Assistant Director of Medical Services, Divisional Headquarters, and is granted the temporary rank of Colonel whilst holding such appointment, 1st March, 1939, *vice* Lieutenant-Colonel (Temporary Colonel) W. H. Donald, V.D., who relinquishes the appointment and the temporary rank of Colonel on 28th February,

1939, and is transferred to the Unattached List with the honorary rank of Colonel, 1st March, 1939.

Australian Army Medical Corps.

To be Captain (provisionally) supernumerary to establishment pending absorption—Paul Angus Tomlinson, 26th January, 1939; Captains (provisionally) R. Mackey and P. Gilbert are brought on the authorized establishment, 21st January, 1939, and 1st February, 1939, respectively; Captain G. E. Crowther is seconded for two years from 20th February, 1939.

To be Captain—Thomas John Ritchie, 5th December, 1938. (In lieu of notification appearing in Executive Minute No. 23/1939, promulgated in *Commonwealth Gazette*, No. 2, of 12th January, 1939.) *To be Captains (provisionally) supernumerary to establishment pending absorption*—Clive Herbert Selby, 26th January, 1939; William Keith Myers and Ian Firth Vickery, 27th January, 1939; Volney Gordon Bulteau, 29th January, 1939; John Matthew Banks and Alan Cathcart Ritchie Sharp, 4th February, 1939; Eric Lewis Davis, 8th February, 1939; and Alan Richard Hazelton, 9th February, 1939. Major A. E. M. Moir is appointed to command the 8th Field Ambulance and to be Lieutenant-Colonel, 1st March, 1939, *vice* Lieutenant-Colonel W. Vickers, D.S.O., V.D. Honorary Captain A. F. James is appointed from the Australian Army Medical Corps Reserve and to be Captain, 28th January, 1939. Lieutenant R. B. W. Pilcher is transferred from the Sydney University Regiment and to be Captain (provisionally) supernumerary to establishment pending absorption, 30th January, 1939. Captain (provisionally) A. D. Frost is brought on the authorized establishment, 17th February, 1939.

Australian Army Medical Corps Reserve.

To be Major—Honorary Captain L. J. Spence, 25th January, 1939. *To be Honorary Captains*—Frank Solomon Hansman and Arthur John Maurice Purchas, 18th January, 1939, and 6th February, 1939, respectively.

Honorary Captain E. A. R. Bligh is retired.

To be Captain—James Macarthur, 20th January, 1939.

Third Military District.

Australian Army Medical Corps.

To be Lieutenant-Colonel—Major G. A. Penington, 1st January, 1939. *To be Captain (provisionally)*—Ramsay Warden, 11th January, 1939. *To be Captains (provisionally) supernumerary to establishment pending absorption*—Gerald John McComas Stoney, William Dudley Refshauge and Donald James Shale, 11th January, 1939. The provisional appointment of Captain I. Buzzard is confirmed. Captains C. D. Donald and J. S. T. Stevens cease to be seconded and are borne supernumerary to establishment pending absorption, 1st January, 1939, and 20th January, 1939, respectively.

Fourth Military District.

Australian Army Medical Corps.

To be Captains (provisionally) supernumerary to establishment pending absorption—Edward Percival Cherry, John Aylward Game, Roger Clare Angove and William Morris Irwin, 25th January, 1939, and Hamilton D'Arcy Sutherland, 1st February, 1939.

Unattached List.

Lieutenant-Colonel L. W. Jeffries, D.S.O., O.B.E., is transferred to the Reserve of Officers (A.A.M.C.), 22nd February, 1939.

Fifth Military District.

Australian Army Medical Corps Reserve.

To be Honorary Captains—George Lloyd Myles, Samuel Finkelstein, Arthur Albert Merritt, George Arthur Kelsall, 13th January, 1939; Richard William Johnson and Henry Manners Hill, 9th February, 1939. *To be Honorary Lieutenant*—Thomas Forrester Christie, 13th January, 1939.

The resignation of Honorary Major F. J. Clark of his commission is accepted, 11th January, 1939; Honorary Captain H. J. Penny is retired.

To be Honorary Major—James Gordon Hislop, 20th February, 1939. *To be Honorary Captains*—Stuart Lindsay Mainland, Maurice Goldman, Stanley Joseph Ingwersen, Otto Waldemar Mater and William Gowan Norman, 20th February, 1939. *To be Honorary Lieutenants*—Charles Frederick Scott and Frederick William Hammond, 20th February, 1939.

Sixth Military District.

Australian Army Medical Corps.

Honorary Captain N. B. G. Abbott is appointed from the Australian Army Medical Corps Reserve and to be Captain (provisionally), 22nd December, 1938; Major R. W. Lawrence is transferred to the Reserve of Officers (A.A.M.C.), 21st December, 1938; the provisional appointment of Captain C. A. Duncan is terminated, 5th March, 1939.

To be Honorary Major—James Henry Brett Walch, 13th January, 1939. *To be Honorary Captain*—John Fletcher Connell, 13th January, 1939.

ROYAL AUSTRALIAN AIR FORCE: PERMANENT FORCE.

Medical Branch.

To Flight Lieutenant—Flying Officers A. A. Green and J. G. Lauder, 1st January, 1939.

Post-Graduate Work.

POST-GRADUATE COURSE AT BRISBANE.

THE Queensland Post-Graduate Committee announces that the annual post-graduate course will be held at Brisbane from May 26 to June 2, 1939. The programme is as follows.

Friday, May 26.

- 4.30 p.m. to 5.30 p.m.—"Blood Transfusion and Intravenous Drip Method", Dr. Milton Geaney, Dr. G. C. Taylor, Dr. Alan Lee and Dr. F. W. Arden, at the theatre, Brisbane General Hospital.
8.30 to 10.30 p.m.—Films (6).

Saturday, May 27.

- 9.30 to 10.30 a.m.—Pathological demonstrations at the Medical School. Morning tea.
11 a.m. to 12 noon.—Demonstration of X ray films at the Brisbane General Hospital.
2.30 to 5 p.m.—Clinical meeting at the Mater Misericordiae Hospital.
8.15 p.m.—Lectures: (i) "Early Diagnosis of Pulmonary Tuberculosis", Dr. Alex. Murphy; (ii) "Present Position of Lung Surgery", Dr. Konrad Hirschfeld; (iii) "Sulphonamide—Chemotherapy", Dr. F. J. Booth.

Sunday, May 28.

- 10 a.m. to 12.30 p.m.—Clinical meeting at the Brisbane General Hospital.
5 p.m.—"5 to 7 party" given by the President of the Queensland Branch of the British Medical Association (Dr. Neville Sutton) and Mrs. Sutton at their residence, Oriol Road, Ascot, to members of the course and their wives.

Monday, May 29.

- 10 a.m.—Demonstration of post-operative treatment, including indwelling gastric tubes, Dr. G. C. H. Hogg, at the Brisbane General Hospital.

3 p.m.—Anæsthetic demonstration, Dr. Ivor Hotten, at the Brisbane General Hospital.

8.15 p.m.—"Chronic Inflammatory Diseases of the Lung", Dr. A. J. Collins, at the Medical School.

Tuesday, May 30.

4 to 5.30 p.m.—Clinical demonstration, Dr. A. J. Collins, at the Mater Misericordiae Hospital.

8.15 p.m.—Anæsthesia, Dr. Ivor Hotten, at the Medical School.

Wednesday, May 31.

10 a.m.—Obstetrical demonstration, at the Brisbane Women's Hospital.

2.30 to 4.30 p.m.—Conference of the Council of the Queensland Branch of the British Medical Association with delegates from the local medical associations, at British Medical Association House, 225, Wickham Terrace, Brisbane.

8.30 p.m.—Dance and bridge party, to be held at the Belle Vue Hotel.

Thursday, June 1.

3 p.m.—Dr. Ivor Hotten: Demonstration of anæsthetics, at the Mater Misericordiae Hospital.

8.15 p.m.—"Post-Operative Troubles, with Special Reference to Appendicectomy", Sir Alan Newton, at the Medical School.

Friday, June 2.

4 to 5.30 p.m.—Clinical demonstration, Dr. A. J. Collins, at the Brisbane General Hospital.

8.15 p.m.—"Making Medical Men", the Joseph Bancroft Memorial Lecture, Sir Alan Newton, at the Medical School.

Correspondence.

TRIGEMINAL NEURALGIA.

SIR: Some months ago I wrote to you advising very strongly against any major operation for trigeminal neuralgia.

I have received several letters privately and have read some in the journal.

I must now reverse my opinion, because it appears that typical cases of *tic douloureux* in good hands receive a great deal of benefit.

My previous opinion was based on the results in my own case, which have been very bad; but after readings letters from Dr. G. Phillips and Dr. Money, it seems that in my particular case the operations were doomed to failure right from the start and should never have been undertaken.

I hope these facts were not generally known ten years ago. I also hope that this short note will undo any wrong I have unintentionally done to sufferers from this awful complaint, and to those surgeons who know they can cure it.

Yours, etc.,

ALEC LYONS.

Eaglehawk,
Victoria,

April 15, 1939.

THE PUBLIC ESTEEM OF THE MEDICAL PROFESSION.

SIR: Concerning the leading article in THE MEDICAL JOURNAL OF AUSTRALIA of December 3, 1938, on the public esteem of the medical profession.

These remarks are true, but nevertheless it is only while we do our utmost in the best way we know to relieve

suffering and to care for the physical and mental health of the people and the race that we will preserve their esteem and confidence; and it is rightly so. To use preventive State medicine is by no means necessarily to sacrifice that personal contact with the patient, nor to deal with the public *en masse*. Rather should it be applied through the general practitioner as the family doctor (following a certain defined programme to ensure its truly preventive aspect) and thus that intimate relationship of knowledge of environment on the doctor's part and confidence and trust on the patient's will be enhanced and preserved to both doctor and patient, and prove invaluable to the better functioning of any such scheme.

Furthermore, it is not necessary always to postulate preventive and State medicine in the one breath.

The people best equipped to plan and direct the best scheme of preventive medicine are the members of our profession, and if we fail to put forward any comprehensive scheme to meet the desires of the people, even if not to lead and direct such desires, who shall say that the fault is not ours and that the profession is not rightly failing from that place of high esteem in spite of the unquestioned selfless and efficient work of doctors as individuals.

Ours is the knowledge rightly to perform this task, and if we fail to accept the responsibility that is laid upon us, should not the State do its best to fill the breach of our defection, even though its efforts are not as perfect as ours might be.

Yours, etc.,

A. McQ. THOMSON.

Balaklava,
South Australia,
April 3, 1939.

THE BEGINNINGS OF BABY HEALTH CENTRES IN NEW SOUTH WALES.

SIR: I have just read with much interest the Charles MacKay Lecture delivered by Sir Robert Wade and published in your issue of March 11. With most of the subject matter of the lecture I am, of course, in agreement; but it contains certain inaccuracies which I cannot allow to pass without comment, as they give a wrong impression of the origins of the baby welfare movement in New South Wales.

Sir Robert Wade states in the lecture in question that it was due to Sir Truby King, of New Zealand, that the baby health centres that exist everywhere in Australia first came into existence, and that his views and plans have been accepted throughout Great Britain, New Zealand and Australia.

I do not presume to speak for the other Australian States, but as far as New South Wales is concerned this statement discloses an entirely incorrect conception of the facts. Nor do I speak as one without authority, inasmuch as I myself, when Medical Officer of Health for the Metropolitan Combined Districts of Sydney, first established systematic infant welfare activities in Sydney in 1904, three years before any move had been made in New Zealand or anywhere else in Australasia, and I continued the work without any break until the end of 1914, when I was transferred from the position of medical officer of health to the head office of the New South Wales Department of Public Health and my work at the Town Hall came to an end.

The campaign which I began and maintained for eleven years was one for the education of mothers in mothercraft. A daily list of all births registered in the city of Sydney was obtained from the registrars, and the home of each child born in a congested or poor-class neighbourhood was visited by a nurse-inspector on my staff, who interviewed the mother, talked to her confidentially on the feeding and management of the child, and strongly impressed upon her the great superiority of breast nursing over every other form of feeding. If breast feeding was impossible the use of properly modified and sterilized cow's milk was advocated, and warnings against the long tube bottle, the

dummy and the use of starchy or patent foods were given. If the mother was under medical care no action was taken. In fact the methods adopted in the campaign were in great part suggested by what I had seen employed in Paris by Dr. Pierre Budin in his famous *Consultations de Nourrissons*, which I had visited in 1895, when doing public health work in Europe. The work proved so successful in the city of Sydney that during the later years of the campaign I increased my staff of nurse-inspectors and took in nine of the congested industrial suburbs surrounding the city.

During the eleven years of the campaign over 28,000 newly born children were visited by my staff in the city and suburbs in the manner described. In the same period the infantile mortality rate of the whole metropolitan area fell from 116 per thousand births in 1903 to 68 per thousand births in 1914. The proportion of breast feeding among the mothers visited increased from 72% in 1904 to 84% in 1912, and as high as 94% in 1914. (But the great gain in the last two years is partly discounted by the fact that the introduction of the baby bonus caused an earlier registration of births in 1913 and 1914.)

In 1914, when my campaign came to an end, the Minister for Public Health took over the control of infant welfare and established the baby clinics with the aid of a baby clinic board, on which I was given a seat in 1915. Baby welfare work was carried on by the clinics much as it had been in my campaign, except that to the visiting of the mothers was added the establishment of centres to which babies could be brought for advice and to be weighed when required—an additional advantage, of course. During the first year of the baby clinics' operations one of the nurse-inspectors on my visiting staff was made supervisor of clinics, thus ensuring similarity of methods between my campaign and the baby clinics. I retained my seat on the board of the baby clinics until 1924, when I retired from the Public Service of New South Wales.

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2. Annual Reports of the Medical Officer of Health, Metropolitan Combined Districts, 1904 and ten subsequent years, Government Printer, Sydney.
3. Annual Report of the Director-General of Public Health, New South Wales, 1933, page 121.

Yours, etc.,

W. G. ARMSTRONG.

49, Wentworth Road,
Vaucluse,
New South Wales.
April 19, 1939.

Proceedings of the Australian Medical Boards.

TASMANIA.

THE undermentioned has been registered, pursuant to the provisions of the *Medical Act*, 1918, of Tasmania, as a duly qualified medical practitioner:

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- Hagarty, Geoffrey Owen, M.B., 1939 (Univ. Sydney), 10, Claremont Road, Burwood.
 Radford, John Goulburn, M.B., B.S., 1939 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.
 Black, Robert Cecil, M.B., B.S., 1939 (Univ. Sydney), Brisbane General Hospital, Brisbane.

Obituary.

STEPHEN HAROLD COOKE.

We regret to announce the death of Dr. Stephen Harold Cooke, which occurred on April 12, 1939, at Melbourne, Victoria.

ARCHIBALD IRWIN BLUE.

We regret to announce the death of Dr. Archibald Irwin Blue, which occurred on April 22, 1939, at Nowra, New South Wales.

Books Received.

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BRITISH MEDICAL SOCIETIES, edited by D'Arcy Power, K.B.E., F.R.C.S.; 1939. London: Baillière, Tindall and Cox, for The Medical Press and Circular. Demy 8vo, pp. 328, with 48 plates. Price: 10s. 6d. net.

MEDICAL INFORMATION FOR SOCIAL WORKERS, edited by W. M. Champion, A.B., M.D.; 1938. London: Baillière, Tindall and Cox. Crown 8vo, pp. 540, with illustrations. Price: 18s. net.

CLASSIC DESCRIPTIONS OF DISEASE, WITH BIOGRAPHICAL SKETCHES OF THE AUTHORS, by R. H. Major, M.D.; Second Edition; 1939. London: Baillière, Tindall and Cox; Baltimore: C. C. Thomas. Royal 8vo, pp. 757, with illustrations. Price: 27s. net.

MEDICAL RESEARCH COUNCIL OF THE PRIVY COUNCIL. REPORT FOR THE YEAR 1937-38; 1939. London: His Majesty's Stationery Office. Royal 8vo, pp. 221. Price: 3s. 6d. net.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

- Radford, John Goulburn, M.B., B.S., 1939 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.
 Stewart, Neville Murray, M.B., B.S., 1938 (Univ. Sydney), Sydney Hospital, Sydney.
 Woolnough, James, M.B., B.S., 1938 (Univ. Sydney), District Hospital, Wallsend.
 Seldon, William Anthony, M.B., B.S., 1939 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

The undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

- Alexander, Munro Scott, M.B., B.S., 1939 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.
 Friend, Kenneth James, M.B., B.S., 1939 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.
 Gulson, Gordon Leslie, M.B., B.S., 1939 (Univ. Sydney), Tamworth Hospital, Tamworth.
 Hammond, Charles William, M.B., B.S., 1939 (Univ. Sydney), West Wallsend.

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BUILDERS OF HEALTH, by D. Dietz; English edition revised by A. W. Haslett; 1939. London: George Allen and Unwin Limited. Demy 8vo, pp. 351, with illustrations. Price: 12s. net.

MODERN TREATMENT IN GENERAL PRACTICE. YEAR-BOOK 1939: A YEARBOOK OF DIAGNOSIS AND TREATMENT FOR THE GENERAL PRACTITIONER, edited by C. P. G. Wakeley, D.Sc., F.R.C.S., F.R.S.E., F.A.C.S., F.R.A.C.S.; 1939. London: The Medical Press and Circular. Demy 8vo, pp. 377, with illustrations. Price: 12s. 6d. net.

BRITISH MEDICAL SOCIETIES, edited by D'Arcy Power, K.B.E., F.R.C.S.; 1939. London: Baillière, Tindall and Cox, for The Medical Press and Circular. Demy 8vo, pp. 328, with 48 plates. Price: 10s. 6d. net.

MEDICAL INFORMATION FOR SOCIAL WORKERS, edited by W. M. Champion, A.B., M.D.; 1938. London: Baillière, Tindall and Cox. Crown 8vo, pp. 540, with illustrations. Price: 18s. net.

CLASSIC DESCRIPTIONS OF DISEASE, WITH BIOGRAPHICAL SKETCHES OF THE AUTHORS, by R. H. Major, M.D.; Second Edition; 1939. London: Baillière, Tindall and Cox; Baltimore: C. C. Thomas. Royal 8vo, pp. 757, with illustrations. Price: 27s. net.

MEDICAL RESEARCH COUNCIL OF THE PRIVY COUNCIL. REPORT FOR THE YEAR 1937-38; 1939. London: His Majesty's Stationery Office. Royal 8vo, pp. 321. Price: 3s. 6d. net.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

- Radford, John Goulburn, M.B., B.S., 1939 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.
 Stewart, Neville Murray, M.B., B.S., 1938 (Univ. Sydney), Sydney Hospital, Sydney.
 Woolnough, James, M.B., B.S., 1938 (Univ. Sydney), District Hospital, WallSEND.
 Seldon, William Anthony, M.B., B.S., 1939 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

The undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

- Alexander, Munro Scott, M.B., B.S., 1939 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.
 Friend, Kenneth James, M.B., B.S., 1939 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.
 Gulson, Gordon Leslie, M.B., B.S., 1939 (Univ. Sydney), Tamworth Hospital, Tamworth.
 Hammond, Charles William, M.B., B.S., 1939 (Univ. Sydney), West WallSEND.

Hazleton, Alan Richard, M.B., B.S., 1939 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

Holme, John Leicester, M.B., B.S., 1939 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

Champaign, John Vance, M.B., B.S., 1936 (Univ. Sydney), Molesworth Street, Tenterfield.

McGrath, Walter Stafford, M.B., B.S., 1930 (Univ. Sydney), 147, Anzac Parade, Kensington.

Mulhearn, John William Harper, M.B., B.S., 1937 (Univ. Sydney), St. George District Hospital, Kogarah.

The undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Barker, John Edward, M.R.C.S., L.R.C.P. (England), 1938, Alpha Road, Prospect.

Bowering, Owen Wheatley, M.B., B.S., 1939 (Univ. Adelaide), Blyth.

The undermentioned has been elected a member of the South Australian Branch of the British Medical Association:

Fotheringham, James David, M.B., B.S., 1937 (Univ. Adelaide), Torrensville.

Diary for the Month.

- MAY 2.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 MAY 3.—Victorian Branch, B.M.A.: Branch.
 MAY 3.—Western Australian Branch, B.M.A.: Council.
 MAY 5.—Queensland Branch, B.M.A.: Branch.
 MAY 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 MAY 11.—South Australian Branch, B.M.A.: Council.
 MAY 12.—Queensland Branch, B.M.A.: Council.
 MAY 16.—New South Wales Branch, B.M.A.: Ethics Committee.
 MAY 17.—Western Australian Branch, B.M.A.: Branch.
 MAY 18.—New South Wales Branch, B.M.A.: Clinical Meeting.
 MAY 23.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 MAY 24.—Victorian Branch, B.M.A.: Council.
 MAY 25.—South Australian Branch, B.M.A.: Branch: Listerian Oration.
 MAY 25.—New South Wales Branch, B.M.A.: Branch.
 MAY 26.—Queensland Branch, B.M.A.: Council.

Medical Appointments.

Dr. J. L. Digby has been appointed Government Medical Officer at Tenterfield, New South Wales.

Dr. R. N. C. Bickford and Dr. M. W. Miller have been appointed Honorary Clinical Assistants to the Medical Section at the Adelaide Hospital, Adelaide, South Australia.

Dr. M. P. C. Smith and Dr. E. M. Sheehan have been appointed Medical Inspectors of Schools in the Department of Education, South Australia.

Dr. E. J. Ryan has been appointed Part-Time Medical Officer to the Mount Isa Hospital, in accordance with the provisions of *The Hospitals Act of 1936*, of Queensland.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xiv to xvi.

ROYAL AUSTRALIAN AIR FORCE: Medical Officers.
 SAINT VINCENT'S HOSPITAL, SYDNEY, NEW SOUTH WALES: Honorary Officers.
 INNISFAIR HOSPITALS BOARD, INNISFAIR, QUEENSLAND: Assistant Medical Officer.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 178, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.

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